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## FEATURES

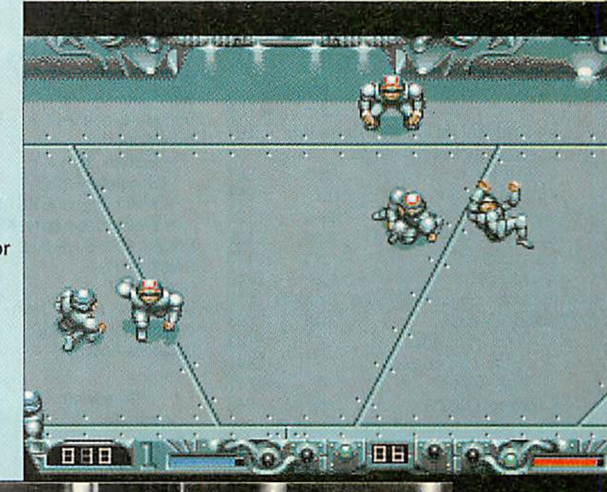


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### Editor's letter

Not a moment too soon, Acorn's new machines have at last been announced. The Risc PC has been carefully designed to address all the limitations of previous Acorn machines, and I am confident that the flexibility and power of the new range will take Acorn Users ahead of the competition, just as the Archimedes did back in 1987.

In this issue we have unashamedly devoted a large portion of the magazine to the Risc PC – ten pages, to be precise. Starting on page 33 you can read the details of the new machines, with comments from Acorn User's team of experts; see for yourself why we consider this to be the most important Acorn release since the A310.

Here's to the future of the Acorn market.

Mark Moxon, Editor



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| Note Invaders | Chalksoft | £20 |
| Notes | Triple R | £9 |
| Number 62 Honeypot Lane | Resource | £28 |
| Numbers and Pictures | Chalksoft | £18 |
| Numberscope | Fisher-Marriott | £19 |
| Number Tiles | Topologika | £29 |
| Number Zoo, age 3-6 | Selective | £14 |
| Numerator, KS3,4 | Longman | £33 |
| Numerator Chaos, KS3,4 | Longman | £18 |
| Oak Logic | Oak | £65 |
| Oak PCB | Oak | £66 |
| OakTape Backup Software | Oak | £73 |
| Oh No! More Lemmings (requires Lemmings) | Krisalis | £15 |
| Ollie Octopus' Sketchpad, age 4+ | Storm | £14 |
| Omar Sharif's Bridge | Krisalis | £19 |
| Optical Professional | Neurotron | £101 |
| Optical Standard | Neurotron | £50 |
| Orion | Minerva | £9 |
| Orrery | Spacetech | £93 |
| **Ovation** | RISC | £79 |
| Overload | Clares | £13 |
| Oxford Reading Tree Stage 2 Story Books, age 5-7 | Sherston | vo £9 |
| Oxford Reading Tree Stage 2 Talking Stories, age 5-7 | Sherston | £37 |
| Padlock | ICS | £10 |
| – site licence | | £30 |
| Pandemonium, KS1,2 | Topologika | £34 |
| Pandora's Box | Fourth Dim | £17 |
| Pappus | Computer Tutorial | £17 |
| Payroll Manager | Silicon | £79 |
| PC Emulator 1.8 | Acorn | £92 |
| PDT | Oak | £149 |
| PenDown, KS1-3 | Longman | £45 |
| PenDown Etoiles, KS3,4 | Longman | £49 |
| PenDown Outline Fonts | Longman | £17 |
| PenDown Plus, KS2-4 | Longman | £67 |
| Personal Accounts V2 | Apricote | £28 |
| Perspectives | TechSoft | £54 |
| Phonic Games | Fisher-Marriott | £28 |
| Photobase – Landscapes | Longman | £POA |
| Photopia | CIS | £POA |
| Picture Book, age 2-5 | Triple R | £16 |
| Picture It! | Appian | £29 |
| – Topic discs | each | £9 |
| PIMS | Longman | £339 |

**NO CHARGE FOR CREDIT CARDS**

| Title | Publisher | Price |
|---|---|---|
| PinPoint 2, KS3,4 | Longman | £79 |
| – site licence | | £340 |
| PinPoint 2 Datafile, KS3,4 – 1851 Census, Diet and Nutrition, Far Away Places, Kartei - The German Questionnaire, Second World War, Solar System each | Longman | £13 |
| PipeDream 3 | Colton | £69 |
| PipeDream 4 | Colton | £85 |
| PipeDriver Dot 1 | ICS | £10 |
| Pipe Mania | Empire | £18 |
| Pirate, age 8-14 | Chalksoft | £19 |
| Placard | ICS | £10 |
| – site licence | | £30 |
| Plague Planet | Alpine | £13 |
| PlayBack | RISC | £17 |
| Play It Again Sam 1 | Superior | £19 |
| Play It Again Sam 2 | Superior | £19 |
| Play It Again Sam 3 | Superior | £19 |
| Plot | Clares | £63 |
| Podd, KS1,2 | ESM | £25 |
| Podd – Welsh, KS1,2 | ESM | £40 |
| Polyominoes | Topologika | £24 |
| Populous | Krisalis | £20 |
| Poster | 4mation | £74 |
| PowerROUTER | Silicon | £159 |
| – education price | | £149 |
| Powermonger | Krisalis | £22 |
| Prehistoric Animals, sprites | Micro Studio | £16 |
| Premier | Circle | £71 |
| – DataBase | Circle | £25 |
| – WordProc | Circle | £25 |
| Premier Manager | Gremlin | £18 |
| Presenter GTi | Lingenuity | £66 |
| Primary Nature | Oak | £44 |
| PrimeArt, KS1-4 | Minerva | £58 |
| PrimeMover, KS2-4 | Minerva | £69 |
| PrimeSolver, KS1-4 | Minerva | £74 |
| PrimeWord, KS2-4 | Minerva | £51 |
| Printer Drivers, RISC OS: Canon BubbleJet, Canon LBP, Canon PJ1080, ColourCel, Epson JX, Epson ESC-P2, HP, Integrex 132 – each | Oak | £15 |
| Deskjet 500C, Epson / Star colour – each | RISC | £15 |
| ProDrivers: Canon LBP8, Epson ESC-P2, HP Colourjet – each | Oak | £33 |
| TurboDrivers: Canon, Epson Stylus 800, HP – each | CC | £42 |
| Printer Spooler | Oak | £68 |
| ProArtisan 2 | Clares | £102 |
| ProCAD, KS4 | Minerva | £450 |
| Programming in ANSI Standard C on the Archimedes | Sigma | vo £15 |
| Prophet (requires 2 Mb) | Apricote | £145 |
| Prophet Entry Level | Apricote | £8 |
| ProSHEET | Silicon | £39 |
| Protext | Arnor | £117 |
| Provocator | Computer Tutorial | £15 |
| Puncman 1 and 2 | Chalksoft | £17 |
| Puncman 3 and 4 | Chalksoft | £17 |
| Puncman 5 to 7 | Chalksoft | £18 |
| Punctuate | Xavier | £31 |
| Punctuate! | Topologika | £20 |
| QDBug | Vertical Twist | £68 |
| QPaint | CIS | £POA |
| Quark | Oregan | £22 |
| Quest for Gold | Krisalis | £19 |
| QuicKey | ICS | £10 |
| – site licence | | £30 |
| Raw Power II | GamesWare | £16 |
| Really Useful CD Rom Vol.2 | APA | £48 |
| Real McCoy 2 | Fourth Dim | £22 |
| Real McCoy 3 | Fourth Dim | £22 |
| Real McCoy 4 | Fourth Dim | £22 |
| Recall, age 8-13 | Sherston | £37 |
| Redshift | Minerva | £11 |
| RemoteFS Parallel Port | Atomwide | £49 |
| RemoteFS Serial Port | Atomwide | £49 |
| Render Bender 2 | Clares | £41 |
| Rephorm | Oak | £47 |
| Report Writer KS1/2 | Creative | £48 |
| Report Writer KS3/4 | Creative | £48 |
| Repro | Oak | £46 |
| Repton 3 | Superior | £19 |
| **Resultz** | Colton | £97 |
| – secondary site licence | | £470 |
| Revelation | Krisalis | £9 |
| Revelation 1, KS2-4 | Longman | £33 |
| Revelation 2, KS2-4 | Longman | £65 |
| Revelation 2 CD Rom | Longman | £90 |
| Revelation ImagePro | Longman | £125 |
| Reversals | Chalksoft | £17 |
| Rhapsody 2 | Clares | £44 |
| Rhapsody 3 | Clares | £75 |
| Rhythm-Bed | Clares | £38 |
| RhythmBox II, age 8+ | EMR | £34 |
| RiscBASIC Compiler | Silicon | £77 |
| RiscForth Compiler | Silicon | £77 |
| RISC OS 3 Applications Upgrade | Acorn | £10 |
| RISC OS 3 First Steps | Dabs | vo £15 |
| RISC OS 3 Programmer's Reference Manual | Acorn | vo £99 |
| RISC OS Style Guide | Acorn | vo £13 |
| RoboLogo | Silicon | £38 |
| Round the World Yacht Race, age 9+ | Storm | £27 |
| Saloon Cars Deluxe | Fourth Dim | £24 |
| – Deluxe Extra Courses | | £15 |
| Saxon Life, KS2 | Oak | £42 |
| S-Base 2 Developer | Longman | £189 |
| S-Base 2 Developer Plus | Longman | £345 |
| S-Base 2 Personal | Longman | £109 |
| S-Base Network | Longman | £254 |
| **Schedule** | Acorn | £18 |
| Schema 2 | Clares | £95 |
| Science, drawfiles | Micro Studio | £23 |
| Score Draw | Clares | £45 |
| Scorewriter PMS Desktop, age 12+ | EMR | £147 |
| ScreenPlay | Widgit | £35 |
| Search and Rescue, age 9+ | Storm | £26 |
| Seashore Guide, drawfiles | Micro Studio | £16 |
| Seelinks – Ourselves, KS1.2 | ESM | £30 |
| Seelinks – Pond Watch, KS2 | ESM | £37 |
| Seelinks – Tourism, KS3 | ESM | £55 |
| Seelinks – Transport, KS2 | ESM | £37 |
| Sellardore Tales, age 10-12 | Sherston | £24 |
| Sensible Soccer | Renegade | £19 |
| Serenade | Clares | £84 |
| Serpents | CIS | £POA |
| Settlement, KS3 | ESM | £33 |
| ShapeFX | Data Store | £10 |
| ShareHolder | Silicon | £102 |
| – education price | | £79 |
| ShareHolder Professional | Silicon | £164 |
| Shares | Apricote | £33 |
| ShowPage | CC | £139 |
| Shylock Gnomes, age 10-15 | Selective | £16 |
| Sim City | Krisalis | £22 |
| Simon the Sorcerer | GamesWare | £29 |
| SkyHunter, KS2 | Longman | £22 |
| Sleuth | RISC | £41 |

*For ordering details please turn to page 4*




Small *Virgo* £19
smArt *4mation* £46
smArt Aliens, Animals, Dinosaurs, Egypt, Europe†, Faces*, Fantasy, Fashion, Fiddles & Drums, Heraldry, Homes*, Leisure*, Look Smart, Smartoons, Trees and Gardens
*English/French/German/Spanish/Welsh; †English/French/German; please specify each *4mation* £15
smArtFiler *4mation* £32
smArt Modern Languages *4mation* £19
Smudge the Spaniel, age 4-8 *Storm* £20
Snippet *4mation* £32
Soapbox *Xavier* £34
SolidCAD *Silicon* £77
SolidsRender *Silicon* £77
SolidTools *Silicon* £204
– education price £194
Somerset Talking Computer Project Learning Materials *Longman* vo £29
SongBook, age 3-10 *EMR* £24
Sound Engineer, age 12+ *EMR* £59
Sound-FX Maker *CIS* £POA
Sound-FX Maker & Photopia *CIS* £POA
Sounds & Rhymes *Xavier* £29
SparkFS *David Pilling* £20
Sparkle *Morley* £59
Special *ICS* £10
– site licence £30
Speech! *Superior* £18
Spell *David Pilling* £9
Spelling week-by-week *Chalksoft* £20
Spex *Aspex* £98
Spheres of Chaos *Matt Black* £19
Splash, age 7-11 *Sherston* £17
Splice *Oak* £28
Split an Image, age 7-16 *Sherston* £16
Spoken Word *Wyddfa* £18
Spoken Word Welsh (Gair ar Lafar) *Wyddfa* £18
Spooler (Clares) *Clares* £12
Spooler (Comp Tut) *Computer Tutorial* £9
Sporting Triangles *CDS* £19
SportsDay *Selective* £20
SportsPeople *Selective* £20
Sprite Editor *Computer Tutorial* £17

**FROM OUR APRIL MAILBAG...**

"You have looked after us so very well. I have the highest praise for all your staff."

SpySnatcher *Topologika* £12
Square Route *Computer Eyes* £16
Squirrel 2 *Digital Services* £127
– site licence £545
Squirrel C Developer's Toolkit *Digital Services* £97
Starspell Plus *Fisher-Marriott* £19
StartWrite *Icon* £55
Stig of the Dump, age 9-13 *Sherston* £23
StockPack *Topologika* £30
StoryBook, age 3-10 *EMR* £59
Striker *GamesWare* £21
StrongED 3 *Stallion* £22
Studio24Plus Version 2, age 11+ *EMR* £149
Studio24Plus Version 3, age 12+ *EMR* £210
Stunt Racer 2000 *Fourth* £24
SUMthing *Resource* £24
SuperDump *Silicon* £20
Superior Golf *Superior* £14
SuperPlot *Silicon* £20
Swiv *Krisalis* £9

TABS *Aspex* £95
Talisman *Minerva* £9
Talking PenDown, KS1-3 *Longman* £53
Talking Pictures *Wyddfa* £18
Talking Pictures Welsh (Lluniau Llafar) *Wyddfa* £18
Talking Rhymes *Topologika* £37
Talking Stories – Gwen at the Fair, Gwen goes to School, Gwen's Nose, Gwen's Tummy each *Wyddfa* £17
Target Maths, age 6-13 *Triple R* £16
Technodream (Nevryon 2) *Superior* £19
TechWriter *Icon* £149
Thinklink *Xavier* £29
ThinkSheet *Fisher-Marriott* £38
Thundermonk *Minerva* £9
Tiles *Brain Games* £19
Timeshare *Fisher-Marriott* £19
Timetabler *Minerva* £549
Time Detectives ... The Victorians, age 7-11 *Sherston* £37
Time Traveller, KS2 *ESM* £39
– Britain Since the 1930s, KS2 £28
– Create Your Own Timelines, KS2,3 £37
– Expansion, Trade and Industry, KS3 £37
– Making of the United Kingdom,KS3 £37
– Medieval Realms, KS3 £37
– Tudor and Stuart Times, KS2 £33
– The Victorians, KS2 £30
TinyDraw/TinyLogo *Topologika* £25
TinyPuzzle *Topologika* £20
Titler *Clares* £114
Toolkit Plus *Clares* £38
Tools Graphics, drawfiles *Micro Studio* £23
Topographer *Clares* £61
Touch Type *Iota* £38
– site licence for 10 £137
Trace *David Pilling* £9
Tracer *Midnight* £46
Transfer2 *Apricote* £16
Transport, drawfiles *Micro Studio* £25
Turbo Type *CIS* £POA
Turbo Type, Sound-FX Maker, E-Numix *CIS* £POA
Twain Canon IX incl Scan-Light Professional *David Pilling* £16
Twain Epson GT8000, 6500 *David Pilling* £16
Twain HP Scanjet II, IIc, IIcx *David Pilling* £16
Tween *Oak* £28
Twilight *Triple R* £12
TWO (Task and Window Organiser) *ICS* £10
– site licence £30
TypeStudio *RISC* £38

Utility Disc 1 *Data Store* £8
Utility Disc 2 *Data Store* £13
Utility Disc 3 *Data Store* £7
Utility Collection *Data Store* £21

Vector *4mation* £75
Victorians, age 7-11 *Sherston* £POA
View»Mac 3 *Human* £65
– Arc/Mac Cable *Human* £24
Viewpoints, age 7-11 *Sherston* £36
Viking Invaders *Oak* £44
Virtual Golf *Fourth Dim* £23
Visual Backup *Dabhand* £39
Vox Box *Clares* £44

Waiter *Digital Services* £35
Waterloo (not OS 3.1) *Turcan* £19
Whale Facts *Topologika* £20
Wordbank *Topologika* £20
Words and Pictures *Chalksoft* £19
WordWorks *CC* £36
**Wordz** *Colton* **£75**
World Geography Maps, draw *Micro Studio* £23
WorldMaker, KS3,4 *ESM* £51
World Map Study, KS3,4 *ESM* £64
World Wildlife, sprites *Micro Studio* £16
WorraCAD *Oak* £65
Worst Witch, age 7-10 *Sherston* £22
Wortgut *Fabis* £19

Xenon 2 *GamesWare* £19

Yacht 2 *Computer Tutorial* £49
Yacht 7 *Computer Tutorial* £94

Zarch *Superior* £14
Zelanites (not OS 3) *Micro Power* £15
Zool *Gremlin* £18

# HARDWARE

## COMPUTERS . . .

A3010 Action Pack *Acorn* £335
A3010 Learning Curve System *Acorn* £599

**A FREE COLOUR TELEVISION WITH EVERY A3010 ?**
**PLEASE ASK FOR DETAILS**

A3020 FD System *Acorn* £650
A3020 HD60 System *Acorn* £775
A4 2M FD System *Acorn* £1350
A4 4M HD60 System *Acorn* £1650
A4 Battery Pack *Acorn* £53
A4 Shoulder Bag *Acorn* £37
A5000 2M HD210 Multiscan System *Acorn* £1225
A5000 2M HD210 Multiscan System with AKF50 monitor, limited offer *Acorn* £1255
Pocket Book *Acorn* £169
Pocket Book Class Pack *Acorn* £1599
Pocket Book Parallel Link *Acorn* £26

## MEMORY . . .

*Fitting extra unless otherwise stated*
*† Fitting fairly easy ‡ Fitting needs expertise*

A3000 1-2 Mb Upgradable † *IFEL* £59
A3000 1-4 Mb † *IFEL* £115
A3010 1-2 Mb £45
A3020 / A4000 2-4 Mb † £80
A310 2 Mb Upgradable soldered ‡ *IFEL* £94
– as above + MEMC1a £119
– as above + MEMC1a + fitting £149
A310 4 Mb soldered + MEMC1a ‡*IFEL* £153
– as above + fitting £189
A5000 2-4 Mb † *IFEL* £89
A5000 2-8 Mb including fitting *Atomwide* £500
A5000 4-8 Mb including fitting *Atomwide* £391
A540 4 Mb † *Acorn* £238

## SCANNERS, DIGITISERS . . .

Colour Converter *Lindis* £145
Eagle M2 *Wild Vision* £289
FaxScan *Spacetech* £94
GreyHawk *Wild Vision* £98
Handipad *TechSoft* £193
Hawk V9 MkII Hardware Dithered *Wild Vision* £195
HiVision colour *HCCS*
– A3000 External £157
– A3000/3010/3020/4000 internal £144
– A5000/400300 £144
iMage (Sharp JX-100) *Irlam*
– for A5000 £490
– for other computers £589
Image Scanner *Iota* £383
– Colour Upgrade *Iota* £239
– Fast Parallel Card *Iota* £98
Pineapple Colour Video Digitiser *Pineapple* £195
– A3000 boxed *Pineapple* £230
ProImage (Epson GT6000) *Irlam*
– for A5000 £989
– for other computers £1089
Scan-Light A4 *CC* £277
Scan-Light 256 *CC* £185
– A3000 External *CC* £190
– A3000 internal *CC* £190
Scan-Light Professional *CC* £550
– as above + SCSI interface *CC* £699
Scan-Light Video *CC* £208
Scan-Light A3000/A4000 *CC* £208
Spectra *RISC*
– A3000 Series / A4000 Internal £545
– A3000 External £555
– Archimedes / A5000 £545
Vision colour *HCCS*
– A3000/3010/3020/4000 internal £96
– A3000 external £109
– A5000/400/300 £96

## PRINTERS . . .

A4-1200/1 Direct Drive Laser Printer *Calligraph* £989
Bubble Jet BJ-10sx *Canon* £175
Bubble Jet BJ-10sx + TurboDriver *Canon/CC* £219
Bubble Jet BJ-230 *Canon* £315
Bubble Jet BJ-300 *Canon* £325
Bubble Jet BJ-330 *Canon* £380
Bubble Jet BJC-600 *Canon* £425
**Bubble Jet BJC-600 + TurboDriver** *Canon/CC* **£498**
Bubble Jet BJC-800 + TurboDriver *Canon/CC* £1219
Bubble Jet BJC-800 Ink Cartridge *Canon*
– Black £16
– Cyan / Magenta / Yellow each £19
DeskJet 500C *Hewlett-Packard* £279
DeskJet 510 *Hewlett-Packard* £225
DeskJet 550C *Hewlett-Packard* £445
Laser Direct HiRes4 *CC* £748
– 250-sheet Paper Cassette £99
Laser Direct HiRes8 *CC* £1049
Laser Direct HiRes Board *CC* £325
New toner cartridge for Canon LBP-4 £59
New toner cartridge for Canon LBP-8 £75

## SUNDRY . . .

486 PC Card 25 MHz 4 Mb *Aleph One* £525
486 PC Card 25 MHz Bare *Aleph One* £369
486 PC Card 50 MHz 4 Mb *Aleph One* £599
486 PC Card 50 MHz Bare *Aleph One* £440
4-slot 4-layer Backplane *IFEL* £52
5315 Monitor *Aydin* £425
A300/400 Fan kit *ICS* £15
A3000 Case for Expansion Card *HCCS* £16
A3000 Expansion Box *Wild Vision* £135
A3000 Serial Upgrade *Acorn* £21
A5000 Fitting Kit for second hard disc *ICS* £15
AnDi Oddule *Baildon* £39
Arckey Function Key Strip Holder *ICS* vo £3
– pack of 4 vo £10
ArcNET *ACS* £69
ARM3 ‡ *Aleph One/IFEL* £165
Arm_Stick *Arm_Tech* £28
ColourBurst *State* £374
ColourCard Gold *Wild Vision* £225
– A3000 External *Wild Vision* £225
Dongle Dangle with screw fittings *ICS* £6
Ergo-keyboard *Castle* £90
Ergo-keyboard for A3000 *Castle* £115
Fan filters (pack of 10) (not A5000) *ICS* £6
Floating Point Accelerator (A5000 + A540) *Acorn* £93
Floppy Discs, 10 × 3½" High Density £10
Four-Colour Refill Kit £30
HiPoint Mouse for A4 *Genius* £49
I²C Adaptor *Baildon* £10
I²C SWI (enhanced IIC_Control) *Baildon* £15
– bought with AnDi Oddule £5
ideA Removable Hard Disc Fitting Kit for A5000 *ICS* £25
I/O Expansion Card *Acorn* £85
Keyboard Extension Cable, 2 m straight *Castle* £8
Microlin fx Pocket Fax Modem *Pace* £179
Micro Mouse *Clares* £25
Midi Expansion Card *Acorn* £80
Monitor Stand for A3000 *ICS* £25
Mono/SCSI *Atomwide* £48
Power Pad (Dual) *GamesWare* £33
Power Pad (Single) *GamesWare* £25
Power Switch *GamesWare* £17
Printer Port Sampler *Vertical Twist* £39
Printer/SCSI *Atomwide* £74
Publishing Pack *CC* £475
Revolution CD-ROM *Morley* £295
Revolution Pro (for SCSI system) *Morley* £435
RISC OS 3 Carrier Board for A310‡ *IFEL* £21
RISC OS 3 Software Upgrade Kit *Acorn* £77
Seal 'n Type spill-proof Keyboard Covers
– Archimedes / A5000 *Kador* £14
– A3000 *Kador* £14
Silent-keyboard *Castle* £94
TouchWindow *Resource* £277
Ultimate CD ROM Dual Speed for A3010 *HCCS* £279
Ultimate CD ROM Single Speed *HCCS* £219
Whisper Fan Quietener (for A300/A400 series only) *ICS* £15
Wizzo IDE Filing System on rom *ICS*
– Wizzo4 for A4 £POA
– Wizzo5 for A5000 £39
Wizzo SyQuest Complete Package £295
– Extra 105 Mb Disc £60




051-625-1006

### *The ideA range*

ICS was the first company to offer IDE products for Acorns back in 1990; now they are the standard choice for new Acorn computers. Building on three years' experience we have continually improved our IDE filing system. It now offers the highest level of RISC OS compliance, and compatibility with at least 62 different hard discs tested by us. Can any other supplier make this claim?

Our IDEFS abolishes the RISC OS limit of 512 Mb, and offers extra features such as password protection, background operation, disc partitioning, and power saving (which allows some discs to stop spinning when idle).

Partitions can have different levels of protection. Family or pupils can access some of your files while you keep others safely out of their reach. Or you can simply protect the whole disc (reformatting is not required for this).

Our hard disc upgrade kits are based around two internal interfaces at present: A3IN for the A3000 Series, and ARCIN for the A300/A400/A500 Series. All kits are designed to a high standard and include all the parts you will need.

A3IN upgrade kits include an I$^2$C expansion socket as standard. They come with a 2½" disc already attached, and are easy to fit once you have opened up your computer. You may safely take no notice of rumours still being spread that internal upgrades might not be safe in an A3000. We have adhered carefully to the guidelines in Acorn's technical specifications, and in three years have never come across a problem.

ARCIN upgrade kits provide a fast 16-bit link all the way from the computer to the hard disc. They can even be fitted to an A310 without a backplane – quite a cost saving. A second hard disc can easily be added later if required.

Interfaces and hard discs can also be bought separately. By shopping around you may even save a few pounds. But beware: not all IDE hard discs work with all interfaces, and if you have a problem it may be difficult to decide who should put it right. We recommend buying a complete kit from one source.

WIZZO is the name given to our IDE filing system when it is supplied as a single rom chip. Wizzo5 is for the A5000, and Wizzo4 is for the A4. You should buy a Wizzo if you need password protection or wish to use larger hard discs. (Wizzo4 has been delayed slightly – we are adding a feature to ensure compatibility with possible future A4 upgrades).

A Wizzo rom by itself will only produce a slight speed improvement. If you need speed in an A5000, fit an ARCIN interface instead. Up to 60% improvement can then be achieved, but this does depend which hard disc you use so do check with us first.

### *How to read our ideA product references*

A number at the end is the nominal hard disc capacity in megabytes. We usually round this down, so the actual formatted capacity may be higher. All discs have auto-parking. Average access times vary but all are below 20 ms.

All prices shown exclude VAT and are subject to change without notice. The cost to us for hard discs can vary enormously from week to week – not always downwards! Your local dealer can obtain *ideA* products from us or from a distributor.

***• PLEASE TELL US WHETHER YOU USE RISC OS 2 OR 3 •***

## *NEW LOWER PRICES !*

### Archimedes A300/A400/A500 Series Internal Upgrades

*Package includes formatted hard disc, ideA interface card, hard disc cradle and fittings, fan kit, replacement multi-purpose LED (power and drive status), manual with fitting instructions. Can be fitted to an A310 without a backplane. If a backplane is used it must be a 4-layer type. Easily fitted by most users.*

| | | | |
|---|---|---|---|
| ARCIN 200 | £270 | ARCIN 420 | £450 |
| ARCIN 240 | £290 | ARCIN 540 | £550 |
| ARCIN 330 | £359 | ARCIN 1000 | £875 |

### A3000 Series Fully Internal Upgrades

*Package includes formatted hard disc mounted on ideA interface card, manual with fitting instructions. Fully internal, using internal expansion slot. Co-exists with floppy drive and memory upgrades. Fits the new 1992 computers. Easily fitted subject to Acorn warranty stipulations.*

| | | | |
|---|---|---|---|
| A3IN 60 | £190 | A3IN 120 | £275 |
| A3IN 80 | £225 | A3IN 130 | £315 |
| A3IN 240 | £399 | | |
| A3000 FAN KIT (not usually required*) | POA | | |

**Only required if the computer has been fully upgraded, e.g. with maximum memory AND Econet AND an external podule.*

### Separates for hard disc upgrades

*We can only guarantee the performance of ideA interface cards with hard discs we have tested ourselves, so please check if in doubt. If you are buying a hard disc for an A5000 please say so. If you intend to fit the disc in addition to an existing one we need to know the make and model of the existing disc. Acorn's interface does not support all makes of disc, and some models will work as a second disc but not on their own.*

*Hard discs on their own are listed as, for example, HD80. An S at the end indicates a 2½" disc.*

| | |
|---|---|
| ARCIN (Archimedes Interface for Internal disc(s)) | £60 |
| A3IN (A3000 Interface for Internal disc) | £75 |
| ARCHIMEDES INTERNAL CRADLE KIT | £15 |
| ARCHIMEDES A300 / A400 SERIES FAN KIT | £15 |
| 4-SLOT 4-LAYER BACKPLANE | £52 |
| POWER CABLE FOR SECOND HARD DISC | £5 |
| A5000 SECOND HARD DISC FITTING KIT | £15 |

| | | | |
|---|---|---|---|
| HD200 | £220 | HD420 | £400 |
| HD240 | £240 | HD540 | £500 |
| HD330 | £309 | HD1000 | £825 |
| HD60S | £130 | HD120S | £215 |
| HD80S | £165 | HD130S | £255 |
| HD240S | £339 | | |

### WIZZO IDE Filing System on rom

*Package includes rom, manual and fitting instructions. Compatible with RISC OS 3.0 and 3.1. Allows up to four logical partitions over two physical drives. Each partition appears separately on the icon bar and can have different password protection. Makes use of existing Acorn hardware for maximum compatibility, but works with a wider range of hard discs. Security breaches using ADFS can be prevented. Can be fitted easily by a competent user.*

| | |
|---|---|
| *Available now:* WIZZO5 for A5000 | £39 |
| *Available soon:* WIZZO4 for A4 | POA |

Quantity discounts available • Dealer enquiries welcome

*Other hard disc sizes may be available. Please contact us for information.*



ICS (Ian Copestake Limited), Dept U2, 1 Kington road, WIRRAL, Merseyside, England, L48 5ET



# Risc PC, the Next Generation

AT last, and after a remarkable seven-year run which culminated in the production of over 300,000 computers, Acorn has introduced a second generation computer based on the Arm Risc processor platform.

Starting at £1,249 + VAT including a 14in monitor, Acorn calls its new baby the 'Risc PC' range. Initial models will be fitted with 30MHz Arm610 processors and the new machine replaces the current A5000.

Acorn now has an effective competitor which can take on top-end 486DX2 PCs and even the recently launched Apple PowerMac. Faster, Pentium-chasing Arm700 and Arm800 upgrades at affordable prices are promised. The machine will have the following specifications:

- 30MHz Arm610 processor, faster Arm700s to follow
- Dual processor slot for low cost (£99 upwards) plug-in 486 PC processor or other CPUs
- Up to 128Mb DRam memory on motherboard
- Up to 2Mb VRam for 16.7 million colours at up to 800 x 600 resolution, 1600 x 1200 in 256 colours
- Versatile case design
- Risc OS 3.5
- 32-bit expansion bus with up to eight slots
- Replaces current A5000, prices from £1,249 + VAT including monitor
- On sale at *Acorn User* Spring show at Harrogate. Risc PC marks the end of the line for the familiar Archimedes family name. A5000s are still available but no more are likely to be produced, though the A4 portable and lower cost A3010, A3020 and A4000 range will remain in production until next year at least.

As Acorn readily admits, Risc PC technology will be used in future portable and lower-cost products, and we'll see some related 'palmtop' products too.

The expandable nature of the Risc PC means that dealers are able to supply literally thousands of different variations on the system and it's expected that customers will be able to specify their own unique combinations.

Launching the Risc PC, the product of a two-and-a-half year project, has been an intensive Acorn project which was started late last year and culminated in a special ticket-only London preview to dedicated Acorn fans on 14 April.

In an unprecedented move and amid tight security, Acorn previewed the new machines to the Acorn press as early as January this year.

Keen-eyed visitors at Acorn World last year and BETT in January actually saw the new Allen Boothroyd-designed Risc PC case, disguised in black, at the centre of Acorn's future technology showcase.

Reaction from the industry has generally been favourable:




The Risc PC: powerful and cost-effective

'We're very positive about the new machine,' said Dave Clare of Clares, who is launching *Pro Artisan 24* and a new image composition package at the *Acorn User* Spring show.

'The promise of the low cost PC card is a big bonus and should dissuade people from moving over to a PC.'

Risc Developments' Adrian Calcraft commented: 'We're very excited by the new machine with its interesting move in the direction of Risc OS and PC compatibility. It's also an interesting response to the Apple PowerMac launch.'

Calcraft added: 'I'm pleased the launch happened earlier than we had originally expected.' The only note of caution was: 'I hope Acorn's marketing can get in the gear to achieve volume sales.'

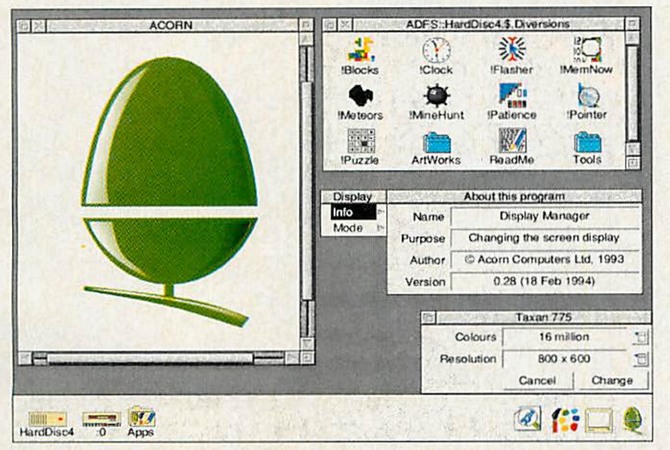
Charles Moir at Computer Concepts is enthusiastic about the machine, but isn't content to sit on a few critical comments: 'First of all this is by far the best machine Acorn has ever produced, but if Acorn do their usual trick of over-pricing it as with other Acorn machines they won't open up vital new markets or attract new customers.' On a technical point, Moir commented: 'Acorn shouldn't have restricted the VRam slot to 2Mb.'

Mark Colton of Colton Software showed some sign of disillusionment about the Acorn market in a recent *Acorn User* Moxon Interview.

He's not a lot less pessimistic when it comes to the Risc PC either: 'The new machine will satisfy a temporary demand from the enthusiasts but after that I don't think it will stop Acorn users switching to the PC or Mac and it won't make PC or Mac users migrate to Acorn.'

The Risc PC's fame will be short-lived, according to Colton: 'I suspect advances in the PC world will soon overshadow the Risc PC.' Instead of trying to satisfy a wide range of aims with the versatile Risc PC, Colton thinks Acorn should follow the Amstrad example and target a wide niche market with an ultra low-cost system, like a DTP package including printer for £999, a sort of 1990s Amstrad PCW.

● For detailed coverage of the Risc PC, turn to page 33.




24-bit desktops are now possible at 800x600 resolution

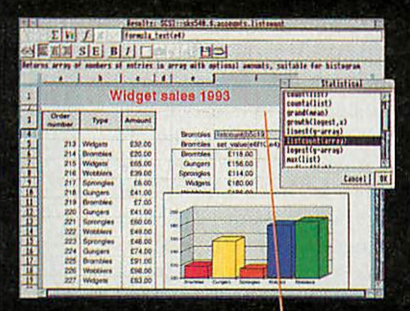
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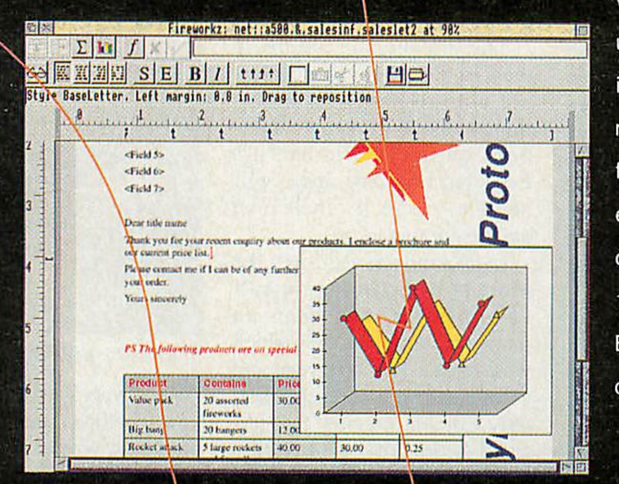
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# Tesco Scheme '94

**COMPUTERS** for Schools, the voucher scheme run by Tesco supermarkets and Acorn over the last two years, has provided schools nationwide with over 10,000 free Acorn computers and thousands more items of software and peripherals during its first two years.

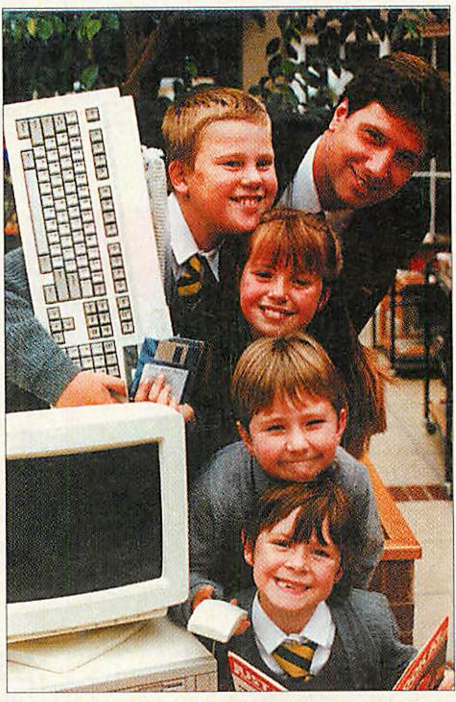
Last year alone over 11,000 schools benefited from the scheme. This year the scheme is to continue with the focus on multimedia and the concept of 'new literacy'. This is supported by the arrival of the educational publishers Thomas Nelson and Sons who will partner Acorn in offering products which can be redeemed by participating schools.

As well as the usual computers – including the new Risc PC range – and peripherals from Acorn, schools will also have the choice of a wide range of CD-Rom-based multimedia literacy materials, books and cassettes covering a wide range of subjects from modern languages to history, science and religion.

CD-Rom players and special needs equipment like keyboards, touch windows and special needs learning materials are also in the Computers for Schools catalogue.

Once again, individual vouchers will be given to Tesco customers for every £25 worth of groceries purchased. Voucher redemption 'prices' of certain items have been reduced; for example an Acorn A3020 computer now costs 500 vouchers less than last year. Another example is that a box of 40 floppy discs is now available for the same 300 vouchers which earned 25 discs last year.

One other major change is that independent software titles are not included in the scheme this year. Ironically, this is because software houses unexpectedly fell victim to the sheer popularity of the Computers for Schools scheme.



Smiling beneficiaries of last year's Computers for Schools scheme. Photo courtesy of *Wrexham Evening Leader*

Direct sales of some featured software titles fell dramatically before the scheme finished, causing some hardship for some of the software houses concerned.

For 1994 the scheme runs from 18 April until 12 June. During this period schools and their pupils will be persuading as many people as possible to do their shopping at Tesco stores and donate their vouchers.

Last year, enterprising schools were reportedly running pensioners down to the local Tesco store in the school bus, for example. Reports from all over the country indicate that the Tesco scheme has generated a tremendous sense of community purpose.

From Acorn's point of view it also gets Acorn computers into schools which would not normally consider purchasing them.

Seventeen-thousand schools should have received Computers for Schools packs by now and the deadline for schools placing orders based on the numbers of vouchers collected is 1 July.

# Colouring Drawings

***DRAW_CHANGER*** is a new application from DEC_dATA for manipulating the colour image component of *Draw* files. Colour and line attributes of existing *Draw* files can all be edited using the program.

For example a drawing can be changed from colour to monochrome, into a negative, lightened or darkened, recoloured or tinted, lines can be slimmed down or thickened, and so on.

*Draw_Changer*'s main advantage is ease of use via a simple icon-based control system.

The program is also compatible with embedded data objects within Computer Concepts' *Impression Style* and *Publisher* DTP applications.

An on-line interactive help system is featured too, which helps those new to the package learn how to use it. The price for *Draw_Changer* is £34 + VAT. DEC_dATA is contactable by fax or phone on (0392) 221702.

# Access

**THE** new low cost workgroup connectivity package from Acorn, called *Access*, has been officially launched. *Access* is a simple to use peer to peer workgroup networking environment for up to 20 machines to share resources like printers and files without dedicating a machine as a fileserver.

*Access* costs £145 + VAT per workstation, for which you get an Ethernet card with software plus a pair of two metre lengths of thin Ethernet cable, a T-piece and a terminator.

## Acorn User the best

The ABCs – the magazine industry's equivalent of the TV ratings – have arrived for the last half of last year, and they confirm that *Acorn User* is still the best selling Acorn magazine in the world. Our circulation is 21.7 per cent ahead of our nearest rival, *Archimedes World*, and 33 per cent ahead of *Acorn Computing*.

## Game controller

The Illusions disc fanzine is to market a new Nintendo-style joypad game controller with auto-firing and a slow motion option. Single (£24.95) and two-player (£36.95) versions are available. For more information contact Illusions at 42 Wimborne Gardens, London W13 8BZ.

## Low cost HDs

Inexpensive IDE hard disc drive kits for the A3010 are now available from Castle Technology, starting at £120 + VAT for a 30Mb unit. Drive sizes range to 240Mb and customers can choose a self-fit deal or add £20 + VAT for a fitting service. Castle Technology is on (0728) 621222.

## Cheaper CD-Rom

Impressive as it may be, the six-disc Pioneer DRM604X CD-Rom drive from Computer Concepts is not the most affordable at £999 + VAT.

So for £500 less, CC is now offering the double-speed version of the same drive, the DRM602X, at £499 + VAT. CC is on (0442) 63933.

## Beebug open day

Beebug in St Albans is holding an open day on Sunday 8 May. If you didn't have an opportunity to see the new Risc PCs at the *Acorn User* Spring Show, this could be the next best opportunity.

There will be a games room and all the latest Acorn and Risc Developments goodies. The doors open from 10am to 4pm. For more information call (0727) 840303.

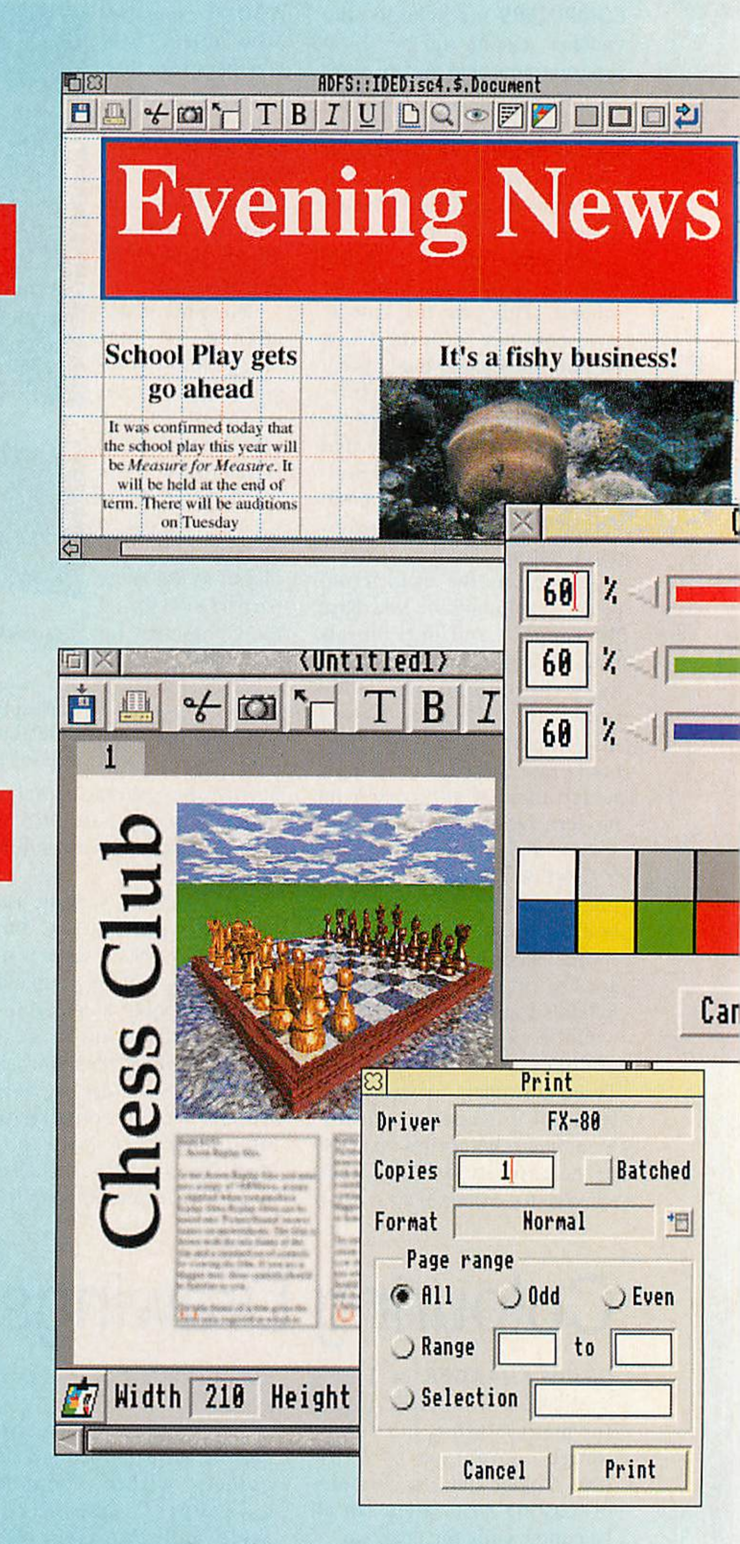



# What do you need

## A Illustrations

- *Supports the graphics capabilities of Acorn's new range of computers;*
- *Graphic backgrounds in frames;*
- *Scanned images*
- *Sprites*
- *Drawfiles*

*... can all be added by drag-and-drop.*




## A Text Styles

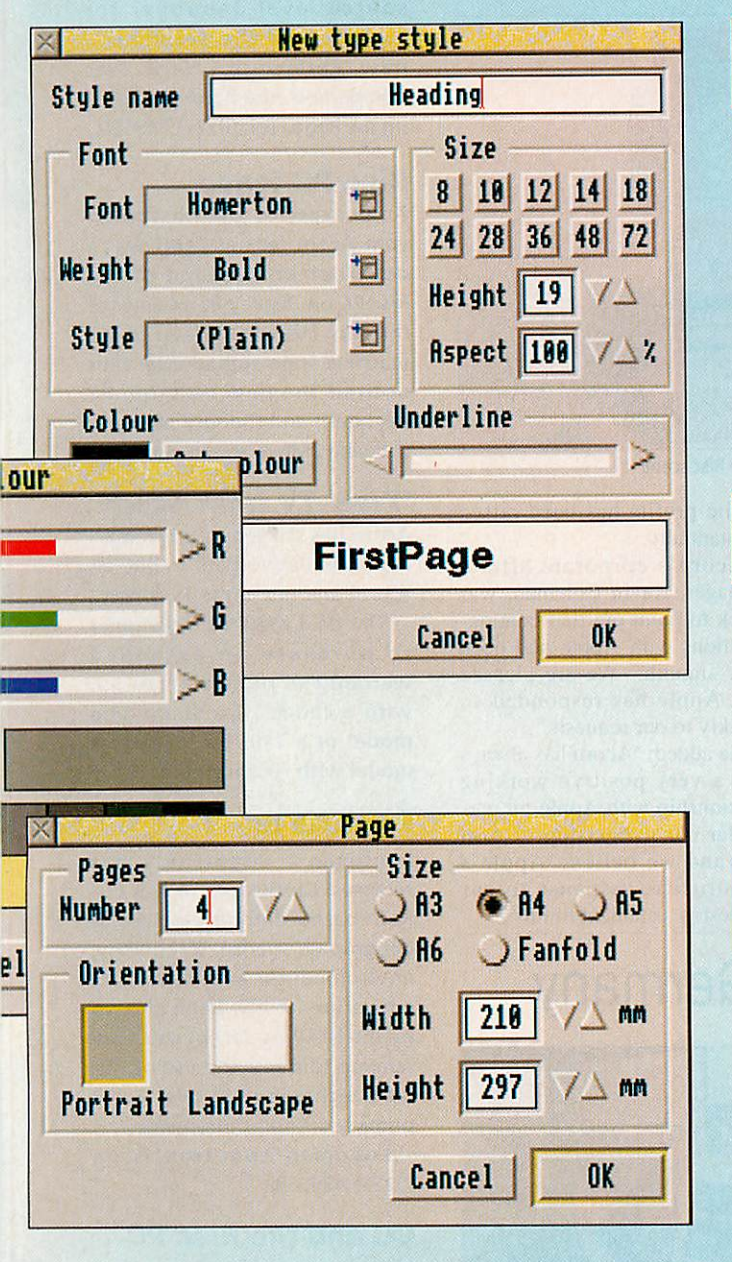
- *Multiple columns;*
- *Headlines;*
- *Captions;*
- *Text borders;*
- *Text can flow around, within or on top of your illustrations;*
- *Pre-defined styles built in;*
- *Easily definable type styles;*
- *Imports **PenDown** documents.*

***First Page** prices: £49 for a single user copy, £140 for a Primary School site licence and £190 for a Secondary School site licence. For more information about **First Page**, please contact:*




***Longman Logotron**, 124 Cambridge Science Park, Milton Road, Cambridge CB4 4ZS. Tel. (0223) 425558; Fax (0223) 425349*

# from a DTP Package?




## Versatility

- *Ideal for:*
  - *Newspapers*
  - *Greetings cards*
  - *Posters*
  - *Letterheads*
  - *Newsletters*
  - *Advertisements*
  - *Booklets*
  - *Menus*

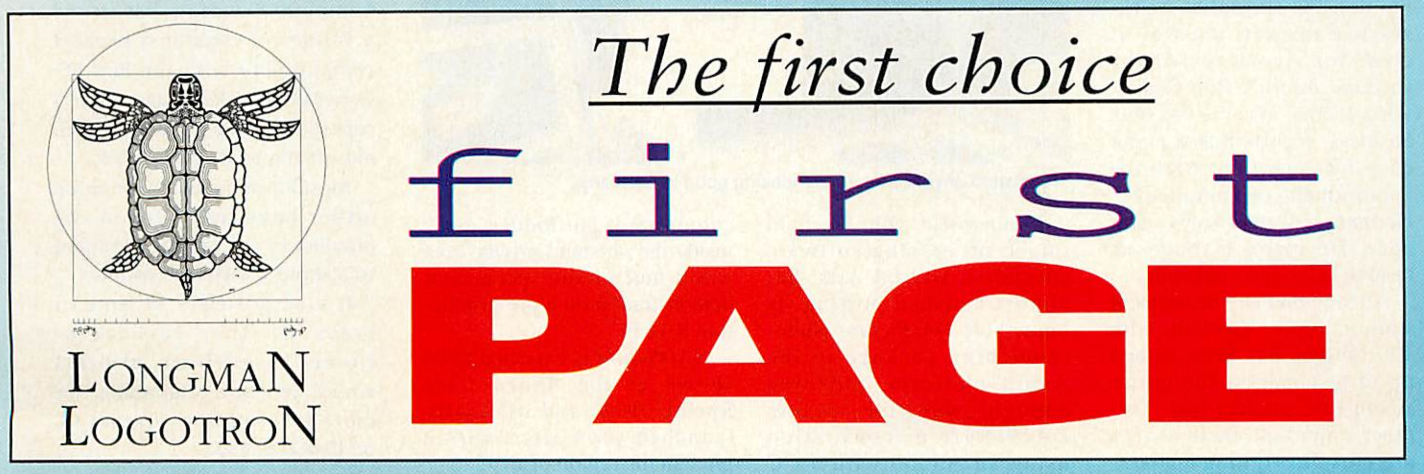
*... and any document with text and graphics.*

## Editing

- *Smart links with* ***Draw*** *and* ***Paint****;*
- *Easy saving routines;*
- *Multiple view options.*

## Easy to Learn, Easy to Use

- *Straightforward, accessible tools;*
- *Create a wide range of document types with the minimum of effort;*
- *Professional-looking documents, even for beginners!*



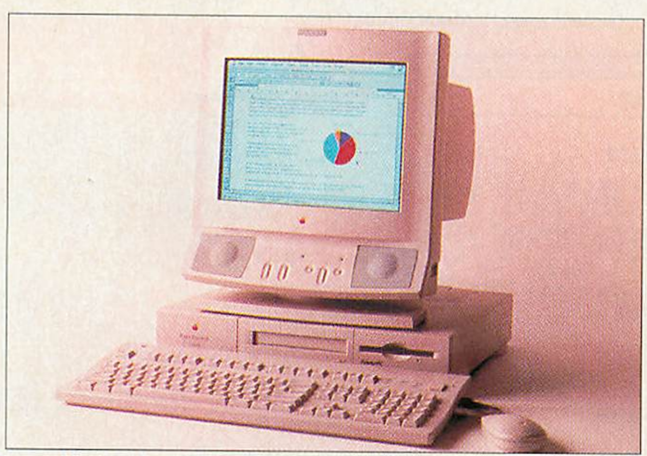




# Apple's PowerMac Marketing Corrected by Acorn

**ACORN** has had the tricky task of reprimanding Apple Computer, its partner in the chip design firm Arm Ltd, over its launch marketing of the new Apple PowerMac product range.

In Apple's campaign there are references to Apple's 'pioneering' Risc-based strategy with its new PowerPC-based Macintosh, which are at direct odds with the history of Acorn's Risc-based Archimedes range, which has shipped more than 300,000 units since 1987.



Power Macintosh – a belated entrant to the Risc scene

Apple, it seems, was keen to take the credit for making Risc a mass-market reality by conveniently forgetting about Acorn.

A full page advertisement in *The Times* on Tuesday 16 March was Acorn's first reaction, welcoming Apple to the Risc family with a 'better late than never' slogan.

At the same time Apple in Germany was being persuaded to amend its literature and statements at the major international CeBIT show in Hannover. Apple UK has reportedly agreed to amend its marketing materials accordingly as have other national subsidiaries of Acorn in Europe and Australia.

We've even heard that Apple in Holland has been threatened with court action. Even more frustrating for Acorn was the fact that they were readying themselves for the launch of the Risc PC just a month later.

Luckily, Acorn has managed to make the most of the ensuing publicity and Acorn's public profile has been raised substantially.

Acorn's corporate affairs manager, Kevin Coleman, was quick to point out that communications with Apple had been very smooth: 'We are pleased that Apple has responded so quickly to our requests.'

He added: 'Acorn has always had a very positive working relationship with Apple, in particular our partnership in Arm Ltd and we believe Apple's constructive response to our request is testament to this.'

# CeBIT Success for Acorn in Germany

**IT** has been a long hard slog but the first signs of success for Acorn in Germany are beginning to appear. In March Acorn had its busiest and most impressive CeBIT show yet.

With the virtual withdrawal of Atari and Commodore from the non-PC specialist workstation market, the way is clear for Acorn to fill the vacuum. Acorn's Bob Coates, who looks after overseas business, reports that a major coup for Acorn has been the appointment of Commodore Germany's former sales manager, Hermann Hähner, as head of sales and marketing.

Already one key department store multiple, Karstadt, with 139 outlets, has been signed up to test-market the entire Acorn Risc product line. Two other important chain stores are close to signing up too.




Translation anyone? Acorn are looking good in Germany.

Meanwhile the German image processing software specialist, Digital Arts, has almost finished porting its impressive *DAsPicture* photo-retouching package to the Acorn platform. Stunning enough was the public *DAsPicture* demonstration using an A5000 with a CC colour card, but hidden away inside the on-stand private area was a much more spectacular demonstration on a pre-production Risc PC.

*DAsPicture* is expected to be shown at the *Acorn User* Spring show and officially launched soon after, with a price in the region of £199.

## New Risc products

Risc Developments has two new products this month. The first is a Wimp front-ended source level debugger for *Easy C*, and the second is a new version of *Hard Disc Companion*, the hard disc back-up package. Tel: (0727) 843600.

## Risc PC tease

An unexpected treat for observant Acorn fans at CeBIT was a development version of the Risc PC on display in a corner of the Arm Ltd stand. News of the machine soon spread after fans noticed the new desktop, PC keyboard and the task manager showing 2Mb of screen memory...

## 'Free' TV from Acorn

Acorn has started its latest marketing initiative with a 'buy an A3010 and get a free TV' offer.

The deal requires a customer to purchase an extended warranty to receive a free TV, with a choice of a Sharp 14in model or a 21in Bush Teletext model with Nicam stereo.

## Photobase

Longman Logotron has released *Landscapes*, a £49 CD-Rom-based database aimed at geography, science, technology, environmental and visual arts education. It has been chosen by the NCET as part of its £4.5m scheme to boost the use of CD-Rom technology in over 2,000 primary schools nationwide.

Longman Logotron is on (0223) 425558.

## CC and the Risc PC

Computer Concepts has issued a statement regarding product compatibility with the Risc PC. Generally speaking, all products released since October 1993, except the Eagle card, work.

Most incompatible CC products either have upgrades in the pipeline or CC advises changing to a slightly different product.

It was not clear at time of press whether FaxPack or Qume LaserDirect printers would be made compatible. For more information contact CC on (0442) 63933.

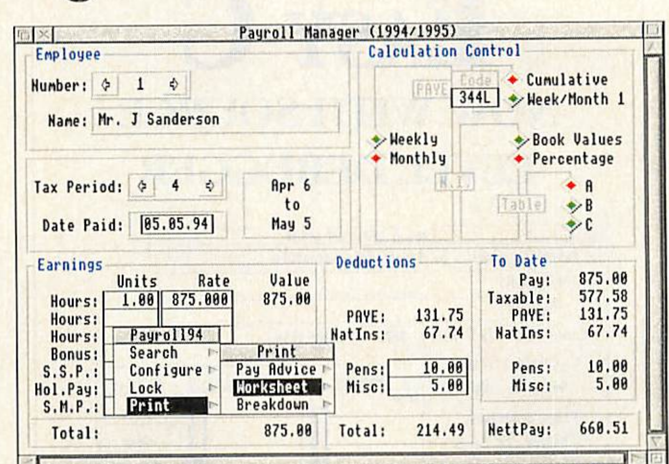


# Payroll Manager Version 3.0

SILICON Vision has released version 3.0 of its popular *Payroll Manager* application. The price remains the same at £99.95 inc VAT and existing users can upgrade for £25 plus the return of their old discs.

A fully functioning demo version of *Payroll Manager version 2.0* is now available for anyone considering the use of their Acorn computer for automating their business payroll.

For more information contact Silicon Vision on 081-422 3556 or Fax 081- 248 3589.



The new *Payroll Manager* application from Silicon Vision

# Mk II PC Podules from Aleph One

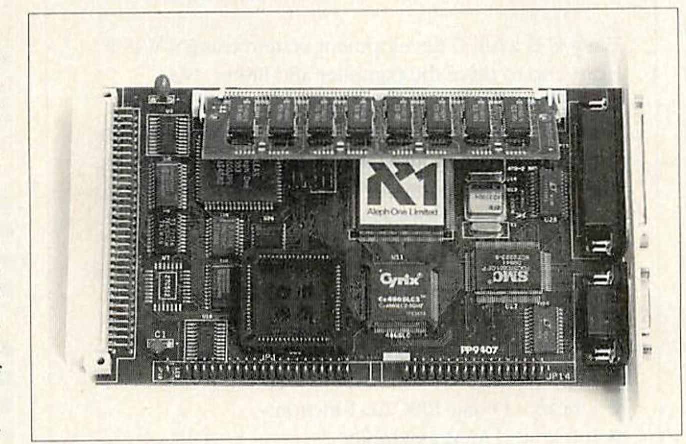
ALEPH One has completely redesigned its PC on a podule expansion card for Archimedes users. The redesign adds more onboard Ram capacity, a local hard disc controller, faster 486 processor options, enhanced I/O ports and lower prices.

Up to 16Mb Ram in SIMMs can now be plugged into the new card, which can also be fitted with a 50MHz 486SLC2 processor to roughly double performance over the fastest of the MkI cards.

An improved *Windows* display driver now supports up to 16 colours at a resolution of 800 x 600 pixels. Optional network driver software will allow the PC card to be a Novell Netware 3.11 client and to run *Windows for WorkGroups 3.11*.

Bare 25MHz 486SLC cards start at £373.62 + VAT (£535.32 + VAT with 4Mb Ram) and the 50MHz SLC2 version is priced £450.21 + VAT (£611.91 + VAT with 4Mb Ram).

The network driver software, a high performance 16550 buffered serial port upgrade and a second serial port option all cost an additional £25 + VAT apiece. For more information contact Aleph One on (0223) 811679 or e-mail info@aleph1.co.uk.



The redesigned PC expansion card from Aleph One

# New Nexus

ONE of the ports waiting to be filled in the new Acorn Risc PC is the network expansion slot, and SJ Research already has such a product. The new Nexus Interface Card is to be debuted at the *Acorn User* Spring Show and leaves all spare Risc PC DEBI podule expansion slots free for other peripherals. Pricing will be revealed at the show. SJ Research can be contacted on (0223) 416715.

# OUP adopts Sibelius 7

THE *Sprig of Thyme*, a series of songs for choir and instrumental groups penned by composer John Rutter using *Sibelius 7*, has been published by the Oxford University Press.

John Rutter processed the music entirely on an A5000 and final artwork was delivered in disc form to the OUP, making it the first time the OUP has ever published a score directly from disc. OUP's production controller, Eirian Griffiths, commented: 'John Rutter bought *Sibelius 7* last summer and I have been impressed with the speed at which he has become familiar with the program ... *Sibelius 7* has now earned a place in our production processes alongside more established methods of music engraving.'

Sibelius Software is on (0223) 302765.

## Image FS

If there is one thing guaranteed about the Risc PC, it's ideal for graphics. Alternative Publishing Ltd has produced *ImageFS*, a filing system which can translate a wide range of foreign bit image formats into Acorn's sprite format.

*ImageFS* can work with most Risc OS applications and currently understands a wide range of files. For more information contact 041-248 2322.

## Artworks competition

Computer Concepts is holding another *ArtWorks* clip art competition. Entries must be original artwork produced using any Risc OS vector drawing package, not necessarily *ArtWorks* itself.

The top prize is a new Acorn Risc PC and there are other goodies too. The closing date is 31 July.

## Ram upgrade

Simtec Electronics has devised a 2-4Mb Ram upgrade for A3010 users which retains the use of the machine's existing Ram, which would otherwise be wasted using some competing 4Mb upgrade solutions.

Simtec has kept the price low at £89 + VAT. Simtec is on (0772) 812863.

## Classroom advice

Hampshire Microtechnology Centre has produced *Using Hard Discs in the Primary Classroom*, a new guide for helping primary school teachers install and use hard disc drives with their Acorns.

The guide is priced at £4 including the two discs and is available from Hampshire Microtechnology Centre, Connaught Lane, Portsmouth PO6 4SJ.

## Teletext card

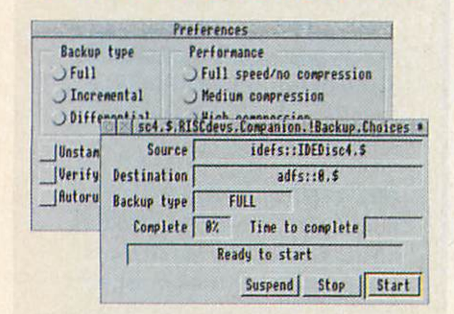
*Tele-Card* from XOB is a slightly different teletext card as it not only offers teletext data reception but normal TV reception as well.

*Tele-Card* is priced £144 and server software £154. Details from XOB on (0307) 840364.

# Latest RISC developments.

## Hard Disc Companion

### NEW IMPROVED RESTORE FACILITY




**Hard Disc Companion** is the complete backup utility providing excellent security for your valuable data.
It provides a structured approach to the backing up of hard drives to floppy discs, and the recovery of files after disc failure or accidental file deletion. Both Full and Incremental backups are supported, and the files to be backed-up or ignored are chosen using simple drag operations. The entire backup specification may be saved in a script file for use at a later date. A compression system ensures that the data is backed up quickly and efficiently.

New features in version 2.50 include:

- Improved restore facilities using standard directory displays
- Support for removable drives
- Up to 30% speed increase (media dependent)
- Incorporates 3D-style throughout



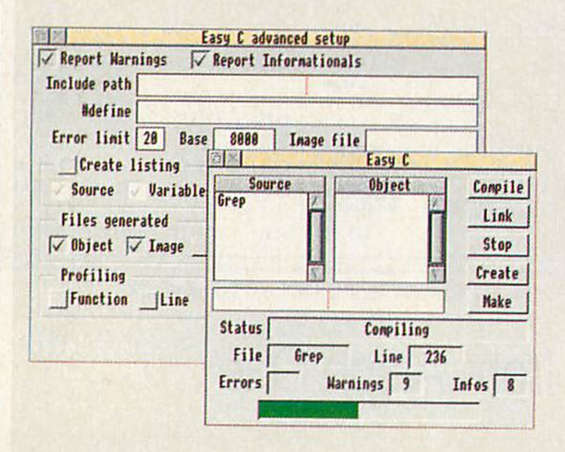
**PRICE £45 + £1.70 carriage**

**HOW TO UPGRADE**

Hard Disc Companion II users may upgrade to the latest version by returning original disc with payment of £5 + £1.70 carriage.
Hard Disc Companion I users should return disc with payment of £15 + £1.70 carriage.

## Easy C

### NOW WITH SOURCE LEVEL DEBUGGER




**Easy C** is a full C development system using a WIMP front-end to drive the compiler and linker. No complicated command-line sequences need to be learnt - C programs may be compiled, linked and run using one single mouse click. It is ideal for beginners, but the full ANSI compiler (not validated) allows it to handle substantial programs.

- Easy-to-use WIMP front-end
- ANSI C compiler generates fast ARM code
- Object code linker for linking programs
- Automatic generation of Make files
- Supports all standard ANSI functions
- Library of basic RISC OS functions
- Integrated ARM assembler
- Facility to create and maintain libraries
- Integrates with editors using 'Throwback'
- FreeWare WIMP library DeskLib supplied

Now supplied with a superb debugger providing source/object level debugging, source and output windows, stack trace, breakpoints, conditional breakpoints, single stepping, variable monitoring, simple profiling and lots more.

Easy C is supplied with a comprehensive user guide including a C tutorial for beginners and a description of all functions provided.

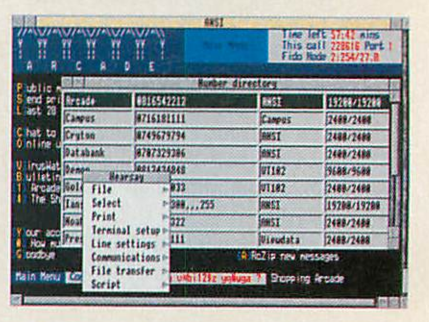
**PRICE £59 + £2.70 carriage**

**HOW TO UPGRADE**

Easy C users may obtain the debugger by returning original program disc with payment of £10 + £1.70 carriage.
User of the original C Development System may upgrade to the latest version of Easy C by returning original program disc with payment of £15 + £2.70 carriage.

## Hearsay

### IMPROVED USER INTERFACE



**Hearsay** is the most powerful general purpose communications package available on Acorn systems.
This superb package is packed with powerful features, yet remains both easy-to-learn and intuitive to use. Now the latest version (2.18) has been further enhanced with an improved user interface and 3D-style throughout.

- VT320, VT102, VT52, ANSI terminals
- Campus 2000, Viewdata, Minitel
- Tektronix 4107 graphics terminal
- Xmodem, Ymodem, Zmodem, Kermit, SEALink background file transfers
- Powerful script language
- Supports RISC OS printer drivers
- Number directory with auto logon
- Call logging
- Macro processor & definable keyboard
- Supports most popular modems



**PRICE £75 + £2.70 carriage**

**HOW TO UPGRADE**

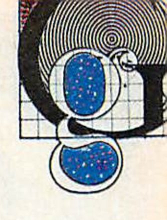
Hearsay II users may upgrade to the latest version free-of-charge by returning original program disc with an SAE.
Hearsay I users should return disc with payment of £35 + £2.70 carriage.



**RISC Developments Limited**

117 Hatfield Road, St. Albans, Herts AL1 4JS Tel. (0727) 843600 Fax. (0727) 860263

*Please add VAT to all prices. Please phone for site licence & educational prices.*



# Risc PC brings graphics to the fore

**ACORN** has at long last brought the graphics capabilities of its machines up to date. The 8-bit, 256 colour modes on the Archimedes have been looking inadequate for several years, and the advent of Photo CD has only emphasised the problem.

While third party add-ons have gone some way towards remedying this, they have never existed comfortably with the Risc OS desktop.

In any case, as these cards are add-on facilities not available on the base system, there has not been enough incentive for software developers to support them.

Acorn's long awaited new computer, the Risc PC, has finally arrived and its impact in the various fields of computing could be no greater than in the field of graphics.

Powered by the Arm 600 series CPU, and in the future by the muscle of 700 and 800 chips, the new machine will offer a level of power and usability unimaginable five years ago.

Support for full 24-bit and 32-bit graphics is one of the most significant aspects of Risc PC's hardware and software capabilities. The increase in raw processing power will act as the foundation for the latest evolution of Risc OS, designed to cater even for the demands of professionals in the fields of graphics, DTP and multimedia.

A large number of third party companies have been working in close conjunction with Acorn for nearly two years, either developing new software or re-programming current applications for use with Risc PC.

Here are some of the new products being developed for the new machines.

## Faster printing from Calligraph

Calligraph, one of Acorn's key developers, has redesigned its direct-drive printer software to give complete compliance with the Risc PC.

Calligraph also says that the possibility exists of driving its 1200dpi printer even further, with the added bandwidth offered by the faster chips and data transfer rates.

With Risc PC's Open Bus interface capable of supporting a second processor chip, like the Intel 486 or a processor endogenous to the Arm series, Calligraph is looking towards direct drive printing using one chip for standard Wimp operations and another as a Rasterising Image Processor, to render print data completely in the background.

Nothing solid has yet emerged but watch this space for forthcoming developments.

## 24-bitmap packages

Clares has developed what it hopes will be two of the most impressive bitmap orientated packages ever seen on the Acorn platform.

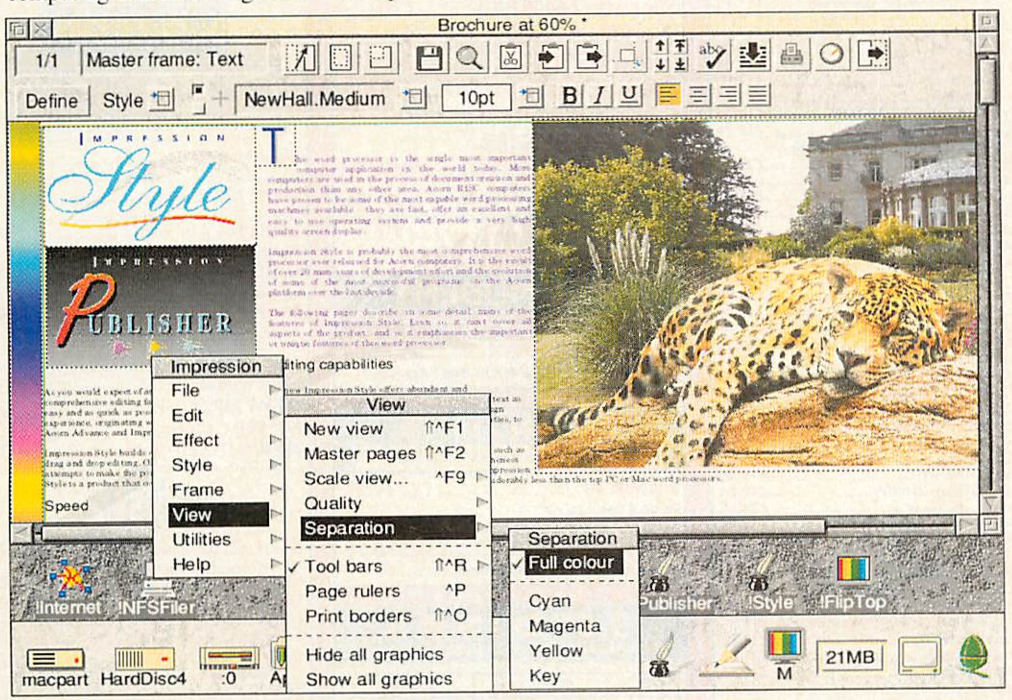
The first of these, provisionally named *ProArt 24*, is not just a 24-bit version of the acclaimed *ProArtisan* package, but will include tools found only in the world of PC, Mac and Workstation applications, with price tags beyond the £500 mark.

Support for pressure-sensitive graphics tablets has been implemented for complete 'pen on paper' to 'oilpaint on canvas' feel. Extremely advanced features have been created, like control over brush size and extent of peripheral anti-aliasing to name just two of the brush painting variables.

Whether or not Clares' other major release, *Compo*, will hold its name, one hopes its specification will remain the same.

*Compo* can be described as an image manipulation workbench, wherein bitmaps, images or masks can be loaded as objects and arranged into compositions, with edge anti-aliasing, 256 level transparency modulation, fading, blending and colour correction facilities *en suite*.

This is possibly the perfect tool for the design of posters, magazine covers and the like.



Computer Concepts' flagship applications now work with 24-bit colour

## Redraws in Artworks

Computer Concepts will not be releasing any new products with the launch of Risc PC, though its enormously successful *Artworks* and *Impression* applications have been extensively rewritten to comply with the requirements of Risc OS 3.5 and to utilise the expanded hardware power.

*Artworks'* graphics redraws – especially in the undithered 24-bit screen modes – are quite astonishingly fast on the new machines when VRam is fitted; colour blends and graduated fills looking nothing short of stunning.

When *Acorn User* visited Acorn Computers Ltd, a rough benchmark was made using the renowned *CorelDraw* 'Snow Barn' file, famed for the tedious length of time taken to redraw this masterpiece of vector imagery.

On a 486DX (50Mhz) a 100% redraw in a 24-bit colour mode typically lasts an epic 35 seconds. An Arm 610 powered Risc PC with 2Mb of VRam managed the same task in under five seconds within *Artworks*, with anti-aliasing disabled.

I hope that CC will jump on the Risc PC software development bandwagon and produce an all new vector package, with as many tools as offered by the likes of *Adobe Illustrator* and *CorelDraw*.

**You can contact the Graphics Page by writing to Jack Kreindler, at The Graphics Page, *Acorn User*, Europress Enterprise, Europa House, Adlington Park, Macclesfield SK10 4NP.**




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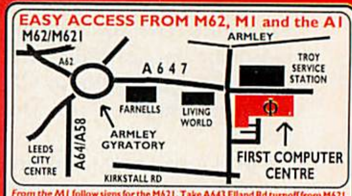
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From the M1 follow signs for the M621. Follow signs for A58. This merges with Armley gyratory. From the A1 take the turnoff for the A64. This merges with the A58 (by-passing Leeds town centre) which meets the Armley gyratory.

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# High Speed Comms for Risc PC

**OWNERS** of the new Acorn Risc PC range can at last get fast serial data transfer as a standard feature, thanks to the machine's high-speed serial port, which promises 115,000 bps in the desktop.

As a comparison, you can just about squeeze 38,400 bps out of an A5000 by poking the serial port chip directly. When using V32bis line speed and V42bis compression, the new machine can give you the maximum possible throughput.

To effectively use the new ITU-T 28,800 baud standard, V34 – the official name for V.FAST – a computer-to-modem (DTE) speed of up to eight times the maximum line speed is required. For example, using V34 with its latest implementation of the V42bis compression standard, Hayes Microcomputer Products Inc. is claiming achievable speeds of 230,400 bps on highly compressible data, exactly twice the capability of the Acorn Risc PC.

So you'd still need an expansion card for this sort of speed, and existing 16-bit products such as the Serial Port Dual-serial card can be plugged into the Acorn Risc PC's 32 bit 'DEBI' DMA Extended Bus Interface sockets.

The popular comms software packages such as *HearsayII* and *ARCterm7* have been extended to take advantage of the new high resolution desktop screen modes and other features of Risc OS 3 Version 3.6.

My only criticisms of the new machine's comms capabilities – in the light of the rapidly expanding multimedia and comms arena where you aren't anyone without Internet access – are that it has only one serial port, and that port is no faster than most 'PC' PCs.

# Over to the Weather

**A NEW** BBS at St. Vincent College, Gosport, Hampshire has been set up to promote the College's speciality in sixth form education, and to provide a source of meteorological data in the form of continuously updated weather satellite images.

These are distributed to the Campus 2000 network daily, and the BBS also features local weather data gathered hourly from a weather reporting station on the college roof.

The St. Vincent BBS is run by sysop Neil McMonagle, who has written most of the interface software that allows the satellite images to be captured, processed and uploaded across the network to the BBS automatically.

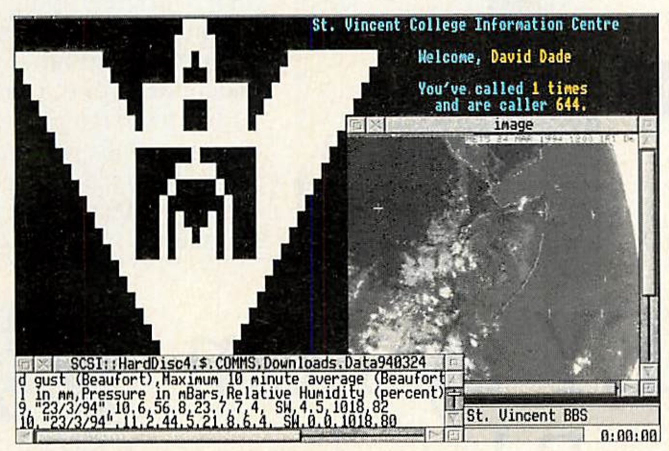
The images are in JPEG format – which can be displayed by the *ChangeFSI* application supplied on the Risc OS 3 support disc – and are mostly high-resolution 800x800 256 grey-scale pictures.

The local weather data files are offered in CSV format for import to most database packages, and show wind speed, wind direction, temperature, barometric pressure and so on.

The *ARCbbs* system runs on an A5000 supported by 160Mb and 200Mb hard drives, and it's also the AUN Ethernet network level 4 fileserver, serving around 40 other networked A5000s and A540s.

There are several weather-related filebases, including archived European weather images and updated Meteosat images of the world.

St. Vincent BBS is on (0705) 511458 with a USR Courier V32bis modem and an Amstrad SM2400.




The weather in Gosport and The Gulf

# Crossing the Nets

**AS** Internet access becomes more widespread among BBS users, there is often a desire to send messages from FidoNet to the Internet and back again.

To send from FidoNet, you must know the site or host name of the Internet node the addressee is on, the user's mailbox name or mail alias on that system, and the FidoNet address of the Gateway system.

The UK FidoNet Region 25 Gateway is node number 2:25/25.0, identified as 'R25_UUCP_Gateway'. Go to the Netmail area of your BBS and address your message to 'Uucp' at address: '2:25/25.0'. You must make the first line of your message read thus (including 'To: '):

```
To:
username@hostname.domain-
name
```

The next line *must* be blank - just press Return.

Write your message and save it using the appropriate editor key sequence. The gateway software will add the correct return address for any reply to you in the form:

```
User.Name@fNODE.nNET.zZONE.
fidonet.org
```

Any spaces in your BBS user name will be changed to dots, and the message will start winging its way across the world.

## QWK reader

Acorn-owning users of PC-based bulletin boards, of which there are many with Acorn interest areas may be interested in a new freeware mail-reader package for the QWK system written by Darrell Taylor.

It's called *ArcQWK* and is available for download from Cobra BBS which is on (0777) 816405. The author can be contacted on Cobra BBS and welcomes any feedback from users on improvements or bugs.

## Prestel is dead - long live New Prestel

On 31st March, Prestel officially closed as BT withdrew its once-popular interactive online Viewdata service.

Many of us old lags cut our comms teeth on BT's Prestel Micronet service, and it was sad to see it whither and die.

However on 1st April, the Phoenix arose from the ashes as the videotex service was privatised and re-opened by NPL – New Prestel Limited. Existing users retain their account numbers, ID and passwords and are promised more dynamic, easier to use services and more hot news and live data at the same, or lower cost than the old Prestel service. We shall see.

## V.Slow

Still the modem manufacturers squabble and kick up the dust over whose patents will be written into the long-delayed 28,800 bps V.34 specification.

The patents dispute could delay the June ratification of the February draft agreement even further. Now there is even a move to bring out a V.34bis standard of 32kbits/sec. The question is this: will it take less than 34bis years to sort that one out?

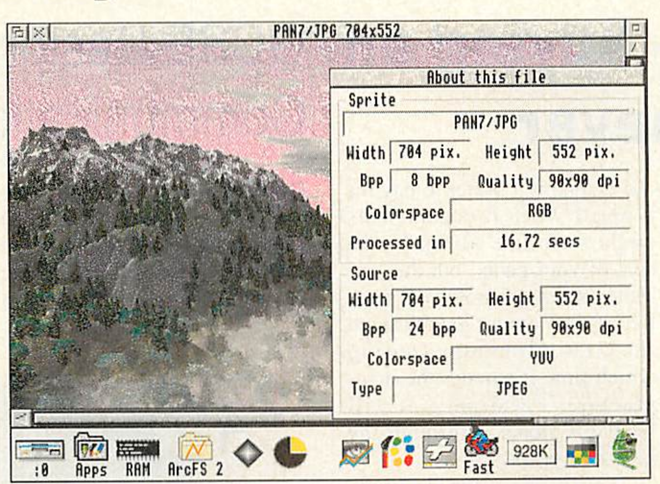
You can contact the Comms page by writing to: David Dade, Acorn User, Europress Enterprise Ltd, Europa House, Adlington Park, Macclesfield, SK10 4NP or by e-mail to: DaviD@arcade.demon.co.uk, or by MODEM on Arcade BBS, User #2 - 081-654 2212 or 081-655 4412.



# Eye for an Eye

**AFTER** amazing us with Frederic Elisei's light sourcing routines in the March issue, Arm's Tech are back again with a new release of *For Your Eyes Only*. Version 2 of Frank Lyonnet's graphics convertor is now shareware, but the improvements over previous versions make it worth every penny of the registration cost.

The most obvious change from version 1.02 is that *FYEO 2* now supports PPM and Targa files as well as JPEG and GIF. Options and features still aren't as thick on the ground as in *Translator*, but *FYEO 2* gets the job done without being unnecessarily complex.




Fast, reliable and cheap: the *For Your Eyes Only* graphics format converter

Three dithering options allow pictures to be previewed quickly and then rendered with some Floyd Steinberg Integration for peak image quality (which incidentally is easily as good as *Translator*).

Speed is the other main upgrade, making *FYEO 2* clock in at almost half the converting time of earlier versions on a standard test picture. *Translator* and *Change FSI* may offer far more features and support many more file formats, but within its obvious limitations *FYEO 2* performs very well indeed.

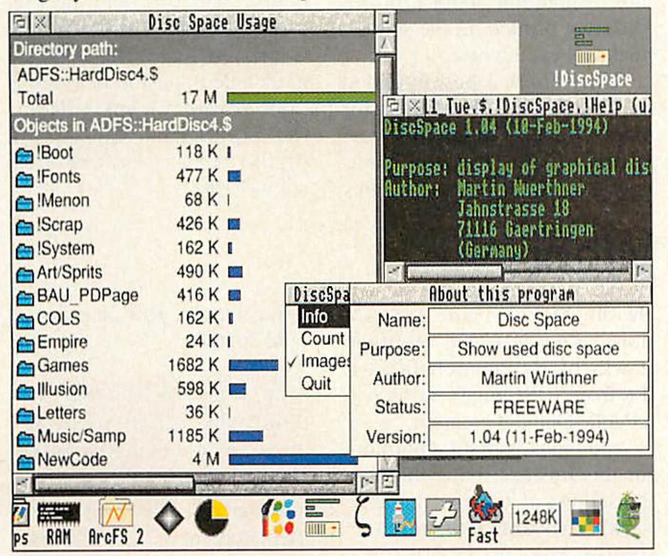
Graphics convertors have been one of the most popular forms of PD programs around for quite some time and only now is the onslaught of graphics cards and the new Acorn machine beginning to spell their demise.

For now, those of us who are forced to stick with 8-bit graphics will find *FYEO* an essential utility. A registered version of *FYEO 2* can be obtained for £5 from: Frank Lyonnet, 4 Rue Garibaldi, 38400 St Martin d'heres, France.

# DiscSpace

**AS** an owner of a pretty small hard disk, I found Martin Wurthner's new *DiscSpace* utility an excellent aid to file organisation.

After a quick scan of any filer path, *DiscSpace* provides you with a visual display of how all those precious megabytes have been used up by your programs. The utility doesn't update itself when you alter files, and there's no way of saving the scan data, but if it's just used to clear some space on your drive, it does the job well and saves a lot of hassle counting everything with the filer. *DiscSpace* is on disc UU9 from The Datastream.




Find out where your hard disc space has vanished to with *DiscSpace*

# Saviour

**A FEATURE** never really picked up on by Risc OS coders is the automatic save featured in many applications on other platforms. Although it's difficult to patch every single Risc OS program in order to add on a time delay save, Ian Giblin's *Saviour* program provides quite a good alternative.

Most desktop programs bring up a save box when F3 is pressed, so when loaded *Saviour* will automatically initiate saves at chosen time intervals.

The only problem with this is that if you're typing when *Saviour* activates F3 you'll end up with extra text in the filename!

Ian gets around this by offering several options to let you execute the save, either by pressing Return, issuing a red alert warning before the save activates (this one's for Trekies) or clearing the keyboard buffer. If you're losing data through crashes of the desktop, then your saviour is probably on disc UU9 from The Datastream.

## Improved mouse support

Users of the fairly low res and unresponsive Acorn mouse often envy those designed for PCs, which are usually of a higher quality.

If you're in this position, Stuart Tyrell's Serial Mouse Driver, now in version 2.10, may be the answer. Support is given to a wide variety of mouse types along with three-button emulation for two-button hardware andtrouble – shooting information. If PC mouse compatibility is what you need, check out *SerialMse* on disc UM19 from the Datastram.

## What price PD?

This month's featured PD library brings up the controversial issue of the cost of PD software. The whole ethos of PD is that nothing is charged for its use, but it's obvious from the prices charged by some libraries that quite a bit of cash is going to be left over after the post, packing and media costs have been covered.

Many argue that PD libraries are only in the business to make money, but not everyone has access to a modem or the internet, leaving libraries as the only real source of PD software.

Despite being one of the most popular libraries, Skyfall is recognised as one of the worst 'offenders' for high prices. Unless you're buying 10 or more discs in one go, the charge is £2 per disc.

To be fair, Skyfall does offer a large range of discs, and provides credit card support and telephone ordering, but when other libraries like Five Star can charge as little as £1 a disc, is it really fair to the PD authors who get no return for their 'free' software?

In the end it will be the decision of the customer as to how much they are willing to pay that will decide the future of the public domain as a medium for free software.

Skyfall can be contacted at: PO Box 2220, Birmingham, B43 7SF.

You can contact the PD page by writing to: Paul Wheatley, Acorn User, Europress Enterprise Ltd, Europa House, Adlington Park, Macclesfield SK10 4NP





# Hardware – buying on the never never

**BUYING** hardware inevitably means a large financial outlay. The equipment will soon become outdated and/or will fall apart due to over-use, requiring a further large outlay, whether you choose to replace it or repair it.

Hire Purchase is one way of spreading the cost but, for a school, is not as straightforward as it is for an individual. Legally a school is not an entity and so if it wishes to buy using HP it will almost certainly have to be done by one of the staff or governors as a personal loan.

If you can overcome that, a five year bank loan for £10,000 is going to cost about £240 per month (fixed rate of 13.5%). Finance via one of the retail outlets can be as high as 28.9%APR.

A loan agreement would not necessarily include on-site maintenance but I've yet to be convinced of the need for this type of insurance.

Personally I prefer to pay for a repair when it occurs. This might seem like 'flying by the seat of your pants' but the current state of technology is such that if a computer gets through the first 12 months (during which time it's under the manufacturer's warranty) it will probably make it through the next five years.

That theory is for electronic parts – mechanical items like disc drives are more likely to suffer breakdown due to wear, but I've only actually lost one disc drive in five years. On-site maintenance agreements work out (very) approximately at £20 per year per computer.

It's true that paying for on-site maintenance brings a lot of peace of mind, but the same outlay could also buy a lot of repairs. To put it all in perspective, over the last five years I've only spent about £900 on repairs on over £30,000 worth of hardware.

# GCSE Computer Studies helped by PTW

**I RECENTLY** received a letter from Stephen Tudway of PTW Software in which he enclosed several of their programs, some of which will be reviewed in the next issue.

The one that intrigues me most is *Equate* which was originally written by a Year 10 student (14 - 15 years old) as part of his GCSE Computer Studies coursework.

It was brought to the attention of PTW by (presumably) the student's teacher and, with help and advice from PTW, the student improved upon it and has developed it into a commercial package.

Computer Studies has had bad press in recent times, and I have to say I have some sympathy with the arguments against it: in particular I'm uneasy about the value of teaching programming to this age group.

Although you don't have to write a program as part of the coursework, many join the course for that reason and, as anyone who has written a program of any substance will confirm, it takes a lot of time.

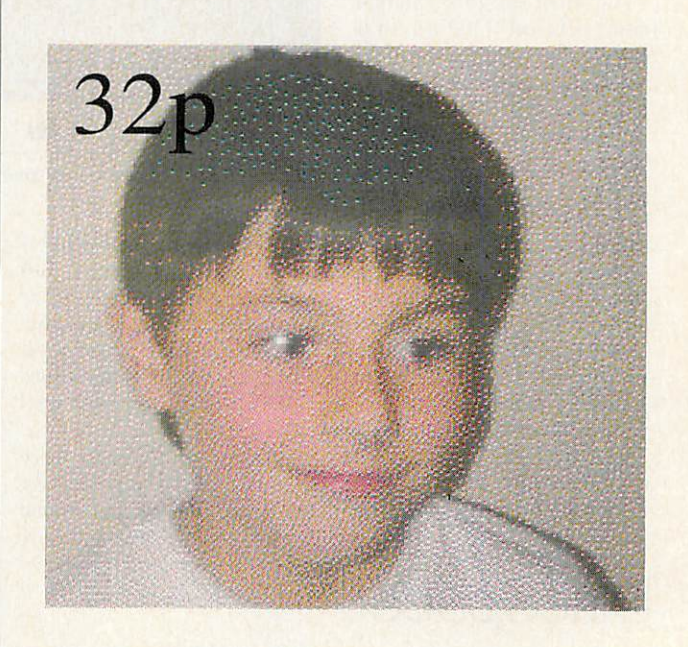
*Equate* is a fine example of what can be done by a keen student with good guidance. It is a well written program and is a credit to the programmer as well as to his teacher.

Without doubt, the project took up an enormous amount of time during what was arguably two of the most important years of his life.

My concern is, did he spend too much time on this project to the detriment of other exam courses?

# GCSE Design and Communication

**ONE** of the design projects for the ULEAC (London) Design and Communication exam is to design a postage stamp. On the disc this month are some postage stamp borders with a *ReadMe* file which may prove useful to students wishing to do their design on computer.




# Consumables

**FOR** me, ordering consumables is the annual headache. Almost everything that I have to buy seems to come from a different supplier and having Acorn and Apple computers, not to mention about a dozen different printers in the school, makes it even worse.

This month I had intended to include a list of suppliers for paper, labels, toner, ink cartridges etc. So, I started phoning around various companies to get catalogues. Before long I came across Carwin, who seem to stock everything and are very competitive.

A re-manufactured toner cartridge for a Canon LPB8 III is less than £40, and the four cartridges for a Canon BJC800 is just under £72. Delivery cost is included and the delivery is fast. Andrea Winstanley is the contact at Carwin on (0708) 861333 (voice) or (0708) 867941 (fax).

# Whoops!

**IN** the March issue I mentioned *Elements*, and said that it was by Archangel. In fact it's from RISCangel and is not a Public Domain program.

Apologies to Paul Thornton for this mistake, but whilst on the subject of *Elements*, a new version is due for release shortly. The cost is £10 for a single user version and £30 for a site licence. RISCangel is on 0752 261691.

**You can now contact the Education page by writing to Geoff Preston, Acorn User, Europress Enterprise, Europa House, Adlington Park, Macclesfield, SK10 4NP**

# Animator

**Once you get started you won't want to stop!**

Image 'Animator' is very easy to use, and is a fun way to make your pictures come alive. Within a few minutes you can be producing your own animated films, either using 'Animators' own built-in set of paint tools or using your own sprites (paint files).

It is an ideal way to produce animations for use with multimedia applications such as DataPower, Genesis, Key Author and so on. It can even be used to add titling and animated graphic on your home videos (using a suitable Genlock board).

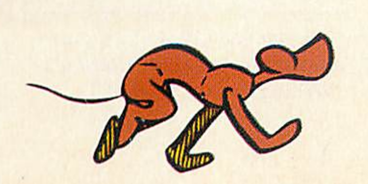
'Animator' comes with 11 example files and a public domain projector you can use to send your films to your friends! It is a fully multi-tasking application that works in any mode, and will work on any RISC OS computer with 1Mb or more.

For Further Information or to Order:
Call (0223) 566789 or Fax (0223) 566788
or Write to:
IOTA Software Ltd,
Iota House,
Wellington Court,
CAMBRIDGE,
CB1 1HZ

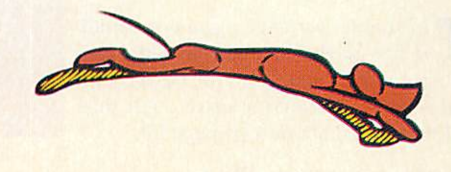


**SOFTWARE**

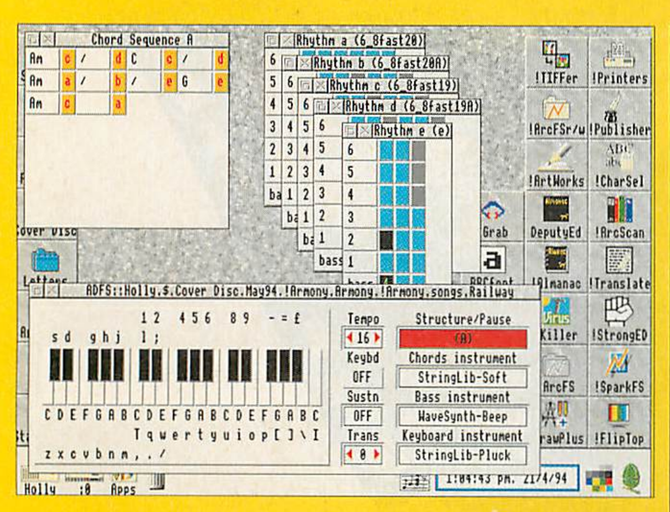
Price £49.00
(ex VAT and P & P)







# THE ACORN USER




## Armony

**By Mike Smith**



This month we offer something a little different in the music line. *Armony* is a sequencer for chords. Enter a sequence of chords and a rhythm, with an optional baseline and other effects and *Armony* will play them back to you.

The rhythm editor is quite sophisticated, with volume and accent controls; even arpeggio effects are possible. Once you have input your rythms you can create and edit a sequence of chords using them.

The program also provides a keyboard with which you can play along to your sequence.

The application directory itself contains a number of samples – considerably improving over the built-in modules – and rhythms which can be loaded into *Armony* and used to create your own tunes. There are also some pre-set tunes which can be edited while you are learning how to use the program.

Full instructions for using the program are provided in a *Help* file. Click with the menu mouse button over the *Armony* icon, and choose the help option from the App. 'Armony' submenu.

## Basic

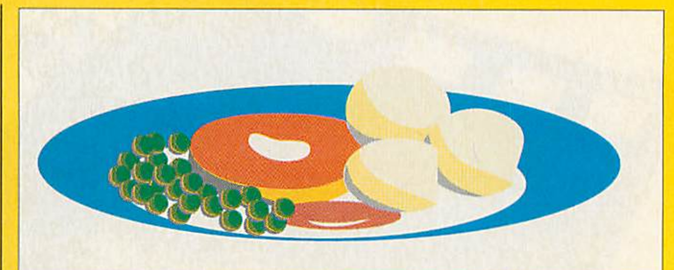


See page 91 for details of this month's Basic examples. We look at DATA statements and their uses, and test your knowledge of the Periodic Table.

## *INFO



This month we have a game so small it fits on the iconbar, an ultra-fast Julia set plotter and, from the bestiary of Jan Vibe, a 'mutated starfish'. All this and more, read about it on page 99.



## Nigel Gatherer's clip art column

**By Nigel Gatherer**



Eat, drink and be merry is the theme of our regular feature this month. On the disc is a single *Draw* file containing wonderful images which can be copied and then used in your own food-related artwork. Apple slices, a toaster, a cup of tea, a pint of bitter and cuddly waiter – they're all here and many more besides. Pure Genius!

## Notify

**By Adam Curtin**



*Notify* is a small utility for Econet users to send messages to users on another station. It keeps a log of incoming and outgoing calls and has a host of user-friendly features.

## T-Rex

**By Rob Ives**

*Acorn User* jumps firmly onto the *Jurassic Park* bandwagon by bringing you our very own computer-generated dinosaur.

Of course, ours is of the print-onto-cardboard-then-cut-out-and-glue-together variety, rather than render-using-incredibly-expensive-computer-animation, and we haven't won an Oscar. However we hope you'll have fun cutting it out and sticking it together.



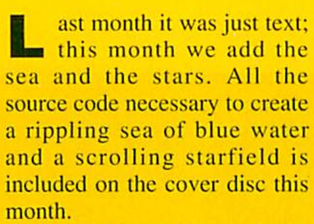
If you want flashy computer animation, see Mark Hobson's 'Writing demos' section.

# COVER DISC

## Demo writing



### By Mark Hobson



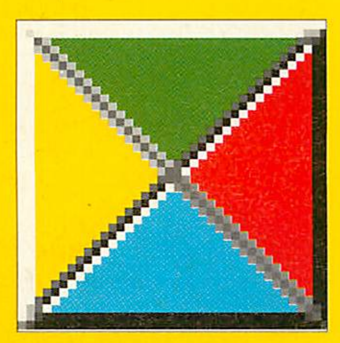
Last month it was just text; this month we add the sea and the stars. All the source code necessary to create a rippling sea of blue water and a scrolling starfield is included on the cover disc this month.

The *Modules* directory has the source code for each component of the demo and, as before, the file called *Demo* can be run to see the ready-compiled demo in action.

Mark Hobson's article on page 87 of the magazine explains the theory behind this month's display. Once you've read that, you can play around with the code yourself to see what effects you can generate. Don't miss next month's issue, where you'll learn to show off some more on your machine.

## Tiles

### By Mark Smith



*Tiles* is a simple but frustrating desktop game. The object is to place tiles on a square board so that adjacent sides have the same colour.

If you match colours on three sides of a tile it is removed from the board and you score a point. The game ends when the board is full.

Tiles multitasks completely on the desktop. Board positions can be saved mid-game, there are three levels of difficulty and the game supports interactive help via the *Help* application. Play and enjoy.

## Stamp Files

### By Geoff Preston

More useful clip art from our Education Editor, Geoff Preston. One of the design projects in the ULEAC Design & Communication exam is to design a postage stamp.

These *Draw* files form a useful basis for designs, as they have a number of different sizes of 'perforated' frames for designing definitive and commemorative stamps.




## Send us your software!

At *Acorn User* we are very keen to publish readers' programs on the cover disc. Ideally we are looking for original ideas and programs which run in the Risc OS environment, but we will consider all submissions.

Under the unique *Acorn User* PD scheme, you retain all publishing rights to your programs, leaving you free to develop your ideas further, or release your software into the Public Domain.

The only condition is that you must not publish the software anywhere else for three months after it appears on the cover disc. After this period you can do what you want – and of course we'll pay you for letting us publish your work, so you can't lose.

If you want to send us any programs, please send a disc and a covering letter to: Acorn User Cover Disc, Acorn User, Europress Enterprise Ltd, Europa House, Adlington Park, Macclesfield SK10 4NP. If possible, instructions for using the programs should be on a text file on the disc, and please enclose an SAE for swift turnaround.

We look forward to hearing from you.

## Disc problems?

Our cover discs are thoroughly tested at each stage of production, but one or two faulty discs may slip through. If you suspect that your disc is faulty, do the following to check it:

1. Put the disc in your drive.
2. Click Menu (the middle mouse button) over your floppy disc drive icon, on the left of the iconbar.
3. Click on the Verify option, and a window will pop up, showing the verification process.

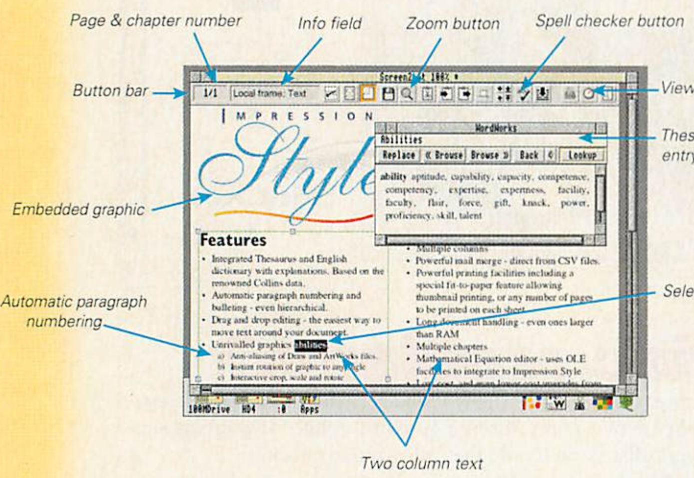
If verification finishes with no errors (the window says 'Disc verified'), then your disc is not physically faulty and you should contact the editorial office at the address given on the contents page.

However, if an error is reported, your disc is faulty and it will be replaced free of charge. Send it with your name and address to: PC Wise Ltd, Dowlais Top Business Park, Dowlais, Merthr Tydfil, Mid Glamorgan CF48 2YY

Most of the programs on the *Acorn User* cover disc are compatible with both Risc OS 2 and Risc OS 3. However the discs are only tested on the new system, and we cannot guarantee that everything will work with the old system. Our advice is to upgrade as soon as possible, as compatability problems will occur more often as software developers make use of the new operating system.




Impression Style is the newest word processor member of the Impression family, and the most comprehensive and powerful version so far released. Over the last few years Impression has become the most successful 32-bit Acorn software application and while Impression's DTP capabilities have been renowned, the fact is that most users use it as their day to day word processor. Impression Style is a major update, with special attention paid towards improving the word processing abilities still further, and making it even easier to use than before. So, for example, it now includes automatic paragraph numbering and




two sorts of on-line help amongst dozens of other improvements.

For those with technical writing needs it includes a mathematical equation editing utility and table building utility. For writers it includes what Archimedes World called "the superb WordWorks dictionary and thesaurus package." Other features that help make Impression Style a better text processor include automatic abbreviation expansion - one of the greatest time saving features available, drag and drop editing, an optional, configurable tool bar, along with firm favourites such as spell check as you type.



# In a *modern* world of computer software we have *created* a package to leave you with a lasting *impression*




Archimedes World summed it up by calling it "a document processor of immeasurable power and sophistication."

And for those who need complete control over the page layout and appearance, Archimedes World and Acorn User magazines both had exactly the same conclusions - "Style itself is currently the best DTP package available."

"Importing foreign formats is one thing Style handles better than any other package I have encountered."

"The manuals are brilliant and offer full details on the use of the software. In fact, these manuals are so good, it seems unlikely that there will be much need for supplemental books from third party publishers."

"At the end of the day, Impression Style is a superb product for the relatively small asking price."

***Archimedes World, Feb 1994***

"Impression Style represents ridiculous value for money."

***Acorn User, Jan 1994***

"There is no other product on the Acorn platform to touch this, whether at the £100 asking price point or at £500. Every writer should own a copy."

***Archimedes World, Feb 1994***

If you use your computer for word processing, then shouldn't you make sure that you use the best tools available?

Impression Style upgrade options

| Upgrade from | Cost (ex VAT) | Total cost inc p&p and VAT |
|---|---|---|
| Impression Junior | £29 + VAT | £37.60 |
| Impression II | £29 + VAT | £37.60 |
| Other word processors † | £70 + VAT | £82.25 |

*† Other word processors include: Pipedream, Wordz, Ovation, First Word Plus TechWriter, EasiWriter, StartWrite and Acorn Advance. To upgrade simply return your key / master / N°1 disc with payment to Computer Concepts.*

**Impression Style RRP £99 + VAT (£116.32 inc)**

*Refer to table for special upgrade offers.*

2M*bytes* RAM *recommended*

*Low cost educational site licences available.*

*Full specification available on request.*

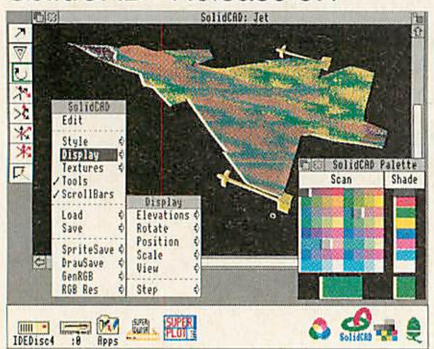



Computer Concepts Ltd
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TEL: 0442 63933 FAX: 0442 231632
EMAIL: Info@CConcepts.co.uk.

# SILICON VISION®

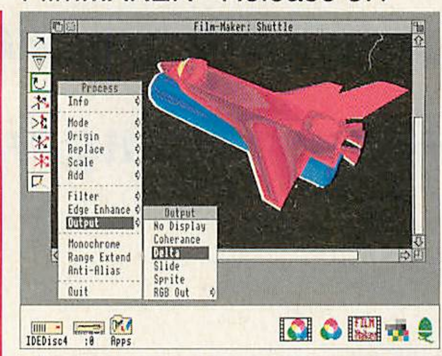
## DESKTOP SOLUTIONS FOR ACORN COMPUTERS

### SolidCAD® Release 5.1



***The most comprehensive 3D CAD package for RISC OS. Powerful 3D CAD facilities allow drawing in Plan, Side, and Front Elevations, Texture Mapping, Printing & Plotting, Drawfile import/export & high-speed realtime animation.*** *"very easy to use and extremely well documented if you get stuck" - Acorn Computing.* ***£99.95***

### FilmMAKER® Release 5.1



***The complete Interactive 3D Animation System for users who wish to explore their creative talents without resorting to programming. Fully compatible with SolidCAD® & SolidsRENDER®.*** *"Animation Oscars are up for grabs" - Archimedes World. "Specifying the movements of objects is a dream" - BBC Acorn User.* ***£79.95***

### SolidsRENDER® Release 5.1



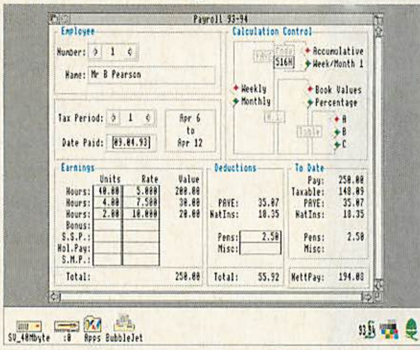
***The most advanced Ray Tracing package for RISC OS. Use standalone or import SolidCAD® designs & FilmMAKER® flightpaths for Object orientated design and Animation capabilities producing images in a fraction of the time.*** *"the fastest ray-tracer ... outputting the highest quality images" - Archimedes World.* ***£99.95***

### SolidTOOLS® Release 5.1



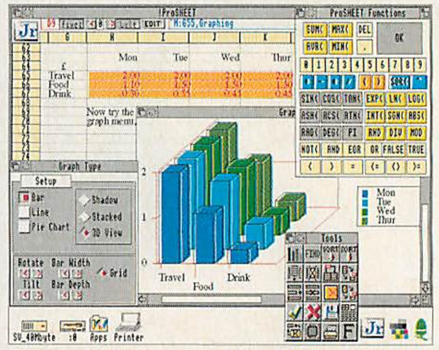
***The first fully integrated environment providing 3D CAD facilities for Architectural, Engineering, Interior design and Teaching CDT. The package includes SolidCAD®, FilmMAKER®, and SolidsRENDER® offering a turnkey solution satisfying all your conceptual design, & presentation requirements.*** *"Puts Silicon Vision at the Top of the CAD market" - Archimedes World.* ***£275***

### Payroll Manager™ 3.0



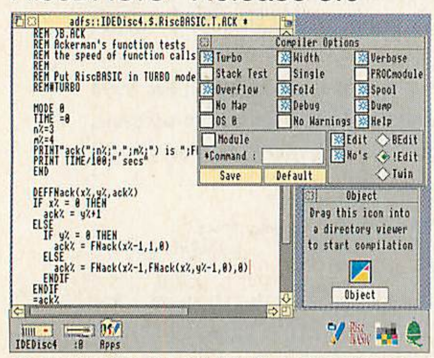
***The complete RISC OS Compliant Payroll Manager handling the latest budget changes. Features include Weekly/Monthly salaries, cumulative or week1/month1 Tax basis, Book or Percentage values and selection of Tables A to E. Reports include Wage slips, Deductions Working Sheets, Cash Breakdown and Total Employer Expenses, plus End of Year P14/P60.*** *"Comprehensive and User friendly"* ***£99.95***

### ProSHEET™ Release 1.3



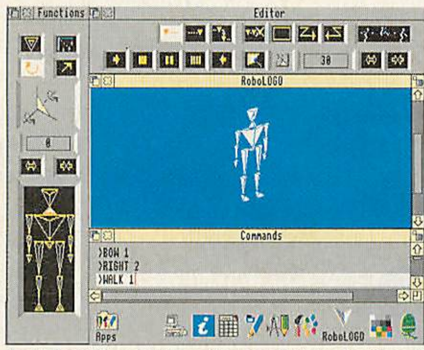
***The complete spreadsheet developed for education, home user and business providing most of the facilities of the heavyweights at a fraction of the price with an emphasis on ease of use by means of icon driven toolbox menus. Features include a full range of spreadsheet functions, macros and hot-linked graphing for bar, line and pie charts with 3D effects.*** *"Affordable Spreadsheet Technology"* ***£49.95***

### RiscBASIC™ Release 3.0



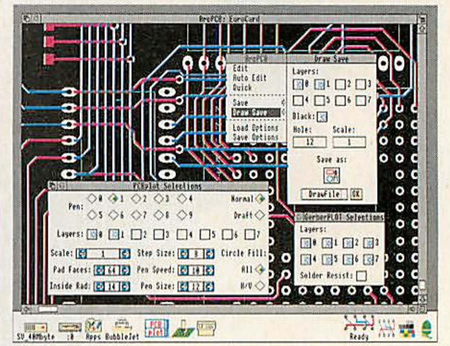
***The unrivalled RiscBASIC Compiler allows you to use the interactive development environment of interpreted BASIC V & VI for fast prototyping and interactive testing followed by source code security and the fastest machine code performance of final compilation.*** *"If you are looking for THE compiler to go for ... my preference is for RiscBASIC" - RISC USER.* ***£99.95***

### RoboLOGO™ Release 1.1



***RoboLOGO provides the ideal introduction to computing allowing 2D and 3D control of an articulated humanoid or animal figure based on the standard LOGO language. The traditional Turtlegraphics and 3D Glider are also supported to utilise existing course work.*** *"Takes Turtlegraphics and LOGO into a new dimension" - Educational Computing.* ***£49.95***

### ARC-PCB™ Schematics v5.1



***The range starts at ARC-PCB v1.8 for purely Digital PCB layout, graduating to ARC-PCB Professional v3.2 for combined Analogue/ Digital PCB layout and ultimately to ARC-PCB Schematics v5.1 providing both Circuit Schematic drawing and all PCB layout features. All versions include Auto-Routing, Multiple layers, Component pulling, Printer & Plotter support, & capacity up to 300,000 components. GerberPLOT & ExcellonDRILL options are £75 each. A 100% Rip-Up Retry PowerROUTER option is £75. The Alpha-Tracks Teaching Course option is £90 for a Site License.*** *"Performs up to professional standards." - BBC Acorn User.* ***£125*** *(v1.8)*, ***£275*** *(v3.2)*, ***£375*** *(v5.1)*

***All prices include VAT & Carriage. All credit cards & official orders from educational establishments accepted.***

***SILICON VISION LTD, SIGNAL HOUSE, LYON ROAD, HARROW, MIDDLESEX, HA1 2AG, UK. TEL: 081-422 3556, FAX: 081 248 3589.***

*Software Site Licenses are 3 times the RRP for use on up to 20 stations or individual machines. Enquire for specific cases.*

# The Risc PC

**Acorn has released a new range of machines: the Risc PC. In this special nine-page section, we examine what's on offer**

After months of intense speculation, Acorn has launched its new computer, the Risc PC. Not resembling anything that Acorn has done before, the Risc PC heralds the beginning of a new era for Acorn, its customers, and the computer industry in general.

At the heart of the Risc PC 600 is a 30MHz Arm610 processor. But before you cry out in disappointment, 'where's the Arm7-based computer?', read on.

The Risc PC is future-proofed. The Arm610 processor in the Risc PC is mounted on a daughter card and connected to the main PCB via a 96-way DIN socket.

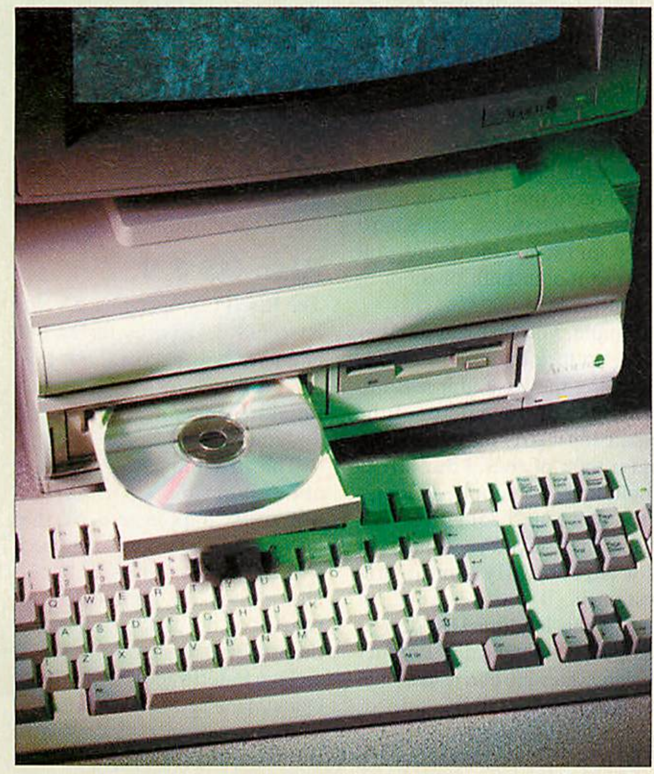
The only significant difference between a Risc PC 600, a Risc PC 700, and a Risc PC 800 (no guesses as to what processor these contain), will be that the Arm610 processor card will be swapped for a new one – an operation that can take less than a minute from start to finish.

The amount of DRam – Dynamic Ram, the sort of memory in machines like the A5000 – has increased dramatically from the previous limit of 4Mb to up to 128Mb in the Risc PC.

Risc OS has been extended to handle this greatly increased memory: the system is capable of handling up to 256Mb of Ram, once large enough SIMMs (Single In-line Memory Modules, or memory chips to you and me) become commercially available.

You can also fit VRam to a Risc PC. VRam, or Video Ram, is special memory which can be read and written to at the same time and, as such, is perfect for storing video displays.

With VRam fitted, the Risc PC can have much higher definition displays with more colours, without slowing down the system; this has transformed the graphics capabilities of Acorn machines, as explored in a later section.





## The Arm family

The Arm610 microprocessor, which forms the core of the Risc PC 600, is a 30MHz, 32-bit Risc CPU with a 4K cache, similar in specifications to its predecessor the Arm3.

However, it also includes a write-back buffer and Memory Management Unit (MMU), using a 4K page size, both of which have a substantial effect on its speed.

In high-resolution graphics modes, when fitted with 1Mb VRam, the Risc PC 600 runs approximately twice as fast as a 25MHz A5000 in a 16-colour VGA mode. Table 1 overleaf shows its performance benchmarks against other Acorn computers and PC competition.

Acorn will be launching an Arm700 microprocessor upgrade later this year, with an 8K cache, enhanced write buffer and a memory Translation Look-aside Buffer (TLB), which will also have a socket for the Floating Point Accelerator (FPA) chip.

It's worth noting that the Arm610 board has no socket for an FPA: only Arm chips ending in '00' can have an FPA fitted.

Acorn has also introduced a comprehensive upgrade policy for the processor in your Risc PC: you can upgrade at any time, for a fixed price, assuming the processor you want is available. Table 2 (see page 35) shows that it is relatively cheap to convert your Arm610 machine into a super-fast Arm800 computer – this factor is vital in showing that the Risc PC will not become obsolete for a very long time to come.

## Extended interface

While retaining backwards compatibility with existing Archimedes single-width expansion cards, two major changes have been implemented in the Risc PC expansion card interface, which is called DEBI – The DMA Extended Bus Interface.

The data bus size has been increased from 16 bits on the A5000 to 32 bits on the Risc PC, and the processor address space has been expanded from 4K on the Archimedes to a massive 16Mb, plus the original 4K.

This 16Mb address space is known as EASI (Extended Acorn System Interface) space, and enables data held on an expansion card in Rom or Ram to be written to and read from directly, without the previous limitation of 4K page chunks. This greatly speeds up the transfer of data between the expansion card and the main memory.

The DEBI bus also supports Direct Memory Access (DMA), so that data can be read from and written to system Ram by expansion cards, without interrupting the CPU.

Another new interface, the Open Bus interface, allows a second processor card to be fitted to the Risc PC alongside the main Arm processor card, and share memory and I/O facilities with it. This interface is covered in detail in a later section.

## Super VGA

Risc PC offers a choice of up to 16 million colours on screen, and you can have this choice at SVGA resolution (800x600 pixels) if you have

2Mb of VRam fitted.

If you need higher resolution than this, you can choose up to 1600x1280 non-interlaced; on a standard Risc PC with no VRam fitted, this is in four levels of greyscale, and in 256 colours with 2Mb of VRam.

These resolutions and colour depths are made possible by the new Arm VIDC20 video controller. Video modes are fully configurable by the user, and there is a direct relationship between resolution and colour depth.

So, for some applications you may choose a higher resolution at the expense of the number of colours, and in others more colours and less resolution.

The graphics performance of the Risc PC is detailed in a later section, but is summarised quickly in Table 3 on page 36.

There are two monitors available with the Risc PC – a 14in model, the AKF60, and a 17in model, the AKF85 – and you can't buy a base unit without a monitor.

However, unlike previous models, the monitors are of a very high standard, especially the very high resolution 17in model, which is a Phillips Brilliance series monitor with a crisp 0.27mm dot pitch. The large desktops possible with the Risc PC really come into their own with the AKF85.

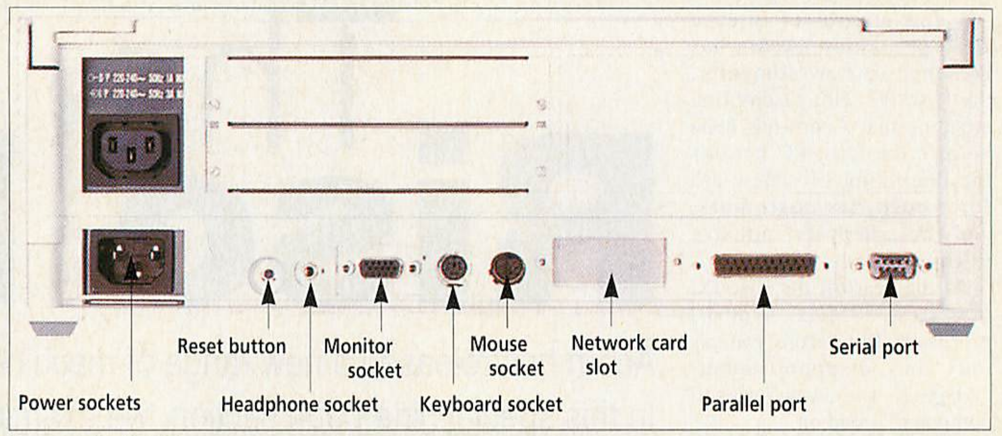
If you think you might want the larger display, it's a good idea to get it straight away. For only £400 more than the 14in model you get the 17in screen, but if you want to upgrade afterwards, it will cost you a whopping £999.

## Inside Risc PC

When you look at the motherboard of a Risc PC, the chip count seems very small. The only major chips on the motherboard are the VIDC20 (for driving the video and sound systems), the IOMD20 (for controlling memory and input/output), and the four Roms containing Risc OS.

The Arm board plugs into a socket, next to the Open Bus interface, and there are three sockets for SIMMs, two for DRam and one for VRam. Apart from that, there is a socket for the backplane, one for the floppy drive, one for the IDE hard disc, a socket for an internal network card and the power point.

A NiCad battery keeps the CMOS settings intact when the power is off, and that's the motherboard: it's surprisingly compact, and looks very well engineered, using the same surface mounting technology as found in the A5000.




The rear of a Risc PC

## The case for...

Original, innovative and elegant, the Risc PC is a real eye-opener, and the case has been designed to allow for the easiest possible access and expansion.

An unexpanded Risc PC case consists of three components: the base, on which is mounted the main PCB and power supply; a modular centre-section or 'slice', which can hold one 3.5in and one 5.25in drive, plus two single-width expansion cards, new or old format; and the top cover.

Each slice also has a spring-mounted curved flap which hides away the CD-Rom, disc and other drives when they're not in use. The three parts can be taken apart and put together in a matter of seconds, without the use of a screwdriver or any other tool.

The case is held together by four glass-filled nylon twist-lock pins. Opening the system simply involves turning each of the pins a quarter revolution and pulling them out.

The 'no screwdriver' policy is evident throughout the case: disc drives are mounted in the slice with powerful spring clips, and the main PCB clips into place as well. The only locating screw to be seen inside the Risc PC is the one which holds the power supply in position.

So what happens if you want to use more than two expansion cards, or if you've got a hard drive and a SyQuest and you want to mount both of them in your Risc PC?

Simple, you just add another slice, up to a maximum of six, including the base unit and lid, so you can fit up to eight expansion cards to a Risc PC, and a total of four 3.5in drives (including the supplied floppy disc), and four 5.25in drives.

Just in case you're wondering how structurally sound this system is, it was designed by one of the leading UK design companies, Cambridge Product Design, who were also responsible for the original BBC micro, now in its 13th year.

Risc PC's attractively coloured case is moulded entirely in a high-impact-resistant plastic called Bayer Bayblend – this tough compound is more commonly found in visors and riot shields.

But if it's so easy to open the computer, how do you stop people from walking off with your hard drives, expansion cards and other upgrades? Acorn foresaw this problem and had padlock holes built into the twist-lock pins enabling you to lock the top cover to the computer and prevent anyone from fiddling with the system.

The Risc PC can be used in one of two configurations; the case can either be laid flat on your desk, supporting a monitor of up to 16kg, or on its side in tower mode, for which extra 'feet' are provided.

Unlike a true tower system however, drives in a tower Risc PC will be positioned on their sides instead of horizontally, so if you have a CD-Rom drive which has a tray rather than a caddy, the CD will fall out in tower mode.

## Risc OS 3.5

The Risc PC's operating system, Risc OS 3.5, is, as far as the end user is concerned, not that different to version 3.1 that inhabits current Archimedes systems.

The first thing you'll notice about Version 3.5 is that it not only makes use of the NewLook 3D desktop, supplied free to existing 3.1 users, but it also allows any outline font to be used on the desktop, replacing the standard System font.

The Palette icon and Mode option, familiar to all Archimedes users, has been replaced with the Display Manager icon.

| Machine | Mips | Dhrystones | | |
|---|---|---|---|---|
| | Mode 0 | SVGA | 16-col | SVGA 256-col |
| A4000 12MHz | 6 | 11 | 7 | 3 |
| A5000 25MHz | 12 | 22 | 20 | 10 |
| A5000 33MHz | 15 | 26 | 23 | 13 |
| A610 30MHz | 26 | 39 | 36 | 25 |
| A610 1Mb VRam | 26 | 40 | 40 | 40 |

PC Mip values for comparison:

| | | | |
|---|---|---|---|
| 386 SX-33 | 6-7 | 486 SX/DX-25 | 11 |
| 486 SX/DX-33 | 15 | 486 DX2-50 | 19-22 |
| 486 DX-50 | 22 | 486 DX2-66 | 26-27 |

Table 1: Machine speeds

| From \ To | >30MHz Arm610 | 40MHz Arm700 | >40MHz Arm700 | Arm800 | High perf Arm800 |
|---|---|---|---|---|---|
| 30MHz Arm610 | £75 | £100 | £125 | £150 | £175 |
| >30MHz Arm610 | – | £75 | £100 | £125 | £150 |
| 40MHz Arm700 | – | – | £75 | £100 | £125 |
| >40MHz Arm700 | – | – | – | £75 | £100 |

Table 2: Processor upgrade prices

This provides the user interface to the greatly enhanced video performance offered by the VIDC20 controller chip in the Risc PC. BBC and Archimedes style 'modes' do not exist in Risc OS 3.5, but instead, clicking on the Display Manager icon allows you to specify the number of colours you want, and choose from the possible screen resolution available.

You can still specify mode numbers if you really want, but the new system is so much easier to use it's unlikely you'll want to.

A new Colour Picker is also provided as part of the operating system, which enables you to choose colours across different applications, using three different colour models – RGB, CMYK and HSV.

Whether third-party applications actually make use of this picker is another matter, however – *ProArt24*, for example, has its own colour picking system.

The Apps icon still appears on the left-hand side of the icon bar and applications may still be loaded from here, but on the Risc PC the Resource filing system is no longer stored in Rom.

As all Risc PCs are supplied with hard drives as standard, the Apps directory is stored on this, allowing the extra Rom space to be used for the new features added to Risc OS.

As the applications in the Apps directory are now accessed from the hard drive rather than the Rom, tailoring the contents of the directory to suit your own requirements is considerably simpler than with version 3.1.

One technical difference between Risc OS 3.1 and 3.5 is to do with memory management. In Version 3.1, memory management was divided between the kernel (the part of the operating system that looks after things like the screen and keyboard) and the Wimp (which looks after the desktop).

The kernel ordered the memory into dynamic areas and an application space, and the Wimp then used a free pool and multiple application spaces, rather than just one application space which had all the spare memory in it.

In the new architecture the free pool memory is managed by the kernel, and the Wimp manages the multiple application spaces; it is responsible for constructing and managing tasks in the desktop. This means the Wimp's operation is simplified as it no longer needs to maintain its own free pool.

Other small changes are improved serial and parallel device drivers, support for the new 32-bit wide data path and 16Mb address space of the expansion card interface, and the inclusion of Acorn Universal Networking software in the operating system.

You can also lock the system so that no one can change or delete any files on the computer until they have entered a password which you set.

## Keyboard

A PC AT-style keyboard is supplied with the Risc PC, which effectively means that all you Archimedes users – except for A4 and A4000 typists – will keep getting Caps Lock and Ctrl mixed up, as they have swapped round from the old Acorn-style keyboard.

Apart from that, the keyboard is smaller than previous models, and is identical in layout to standard PC keyboards. The mouse now plugs into the back of the computer, and new mouse drivers also enable you to plug a PC-type mouse into the serial port. The mouse supplied is the same as supplied with existing machines – a Logitech model.

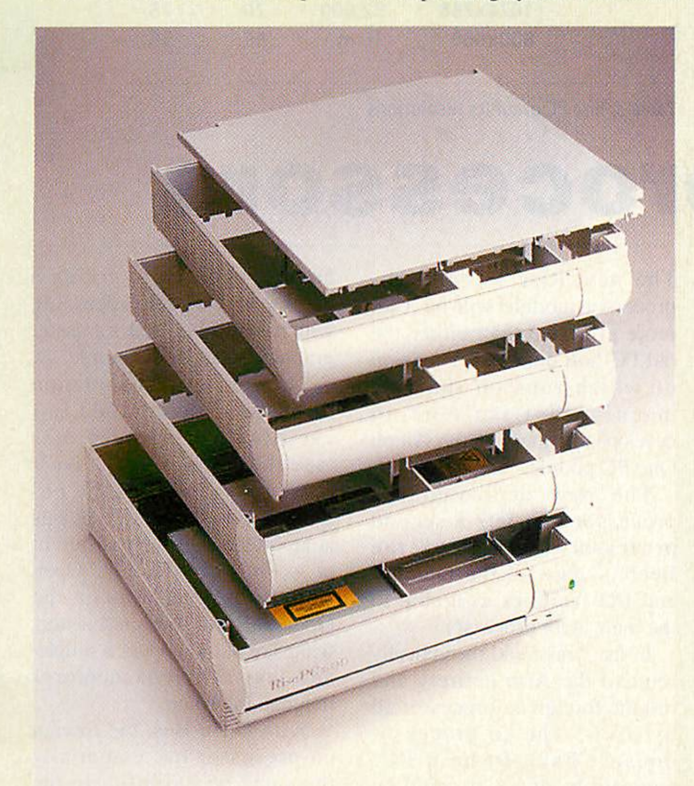
## Conclusion

The Risc PC is a serious change of direction from Acorn. The attitude of cutting everything down to a minimum and preventing third parties from getting at the insides of the machine has disappeared, and Acorn has gone out of its way to provide sockets and plugs all over the motherboard, for all manner of expansion possibilities.

Using a Risc PC tends to elicit one of two responses. The first is 'it's just a faster A5000 with more colours', and the other is 'it's a real breakthrough.'

Both are valid: anyone who is familiar with existing Acorn hardware will be at home with a Risc PC straight away, but most of the criticisms of previous machines – heavy overpricing, non-expandability and lack of memory – are no longer valid.

Over the next few pages a number of responses to the Risc PC are discussed, from Graphics and Education to the effect of the Risc PC on Acorn's standing against the Mac and PC platforms. There's no doubt that Risc PC has breathed life into the Acorn



The revolutionary case design

## Prices

| | Model 1 | Model 2 | Model 3 |
|---|---|---|---|
| DRam fitted | 2Mb | 4Mb | 8Mb |
| VRam fitted | None | 1Mb | 1Mb |
| Hard disc | 210Mb | 210Mb | 420Mb |
| Expansion slots | 2 | 2 | 4 |
| 3.5in drive bays free | None | None | 1 |
| 5.25in drive bays free | 1 | 1 | 2 |
| Price inc 14in Monitor | £1249 | £1399 | £1699 |
| Price inc 17in Monitor | £1649 | £1799 | £2099 |

| | | | |
|---|---|---|---|
| Extra slice | £99 | Econet card | £49 |
| Ethernet card | £99 | PC Card | £99 |
| 1Mb VRam | £129 | 2Mb VRam | £199 |
| 210Mb HD | £199 | 420Mb HD | £299 |

- Extra slice upgrade includes upgraded power supply.
- PC Card is only £99 if bought with system, when it includes just DR DOS 6. If bought separately it costs £249, but includes both DR DOS and Windows.
- Prices exclude VAT.

# Risc PC Graphics

**ONE** of the primary objectives of the Risc PC project, codenamed Medusa, is dramatic video performance improvements and the development of multimedia optimised hardware. This will have a profound affect on the graphics capabilities of the Acorn platform.

A high performance 'Video Subsystem' uses the VIDC20 chip to process video data, stored either in the familiar DRam screen buffer or in one to two megabytes of dual ported Video Ram (VRam).

With the optional VRam the Arm is completely freed from the task of refreshing the screen, eliminating performance loss in large screen modes; on existing machines, even with graphics accelerator upgrades, you get a slowing down in high resolution modes.

The video data bus is 32 bits wide enabling 24-bit graphics to be manipulated with an extra eight bits – these can provide 256 levels of control, such as transparency levels as used in video overlaying.

At the time of writing, the guaranteed minimum video performance figures were quoted as being 110MHz video pixel rate, with memory bandwidth of at least 38Mb/s using DRam for video data, rising to 76Mb/s and 152Mb/s with 1Mb and 2Mb of VRam fitted respectively.

VIDC20 is expected to be fully characterised within a few months after Risc PC's launch and screen resolutions and refresh rates are expected to be designed around a pixel rate as high as 135MHz, though end users will typically find 160MHz possible, giving 1600x1280 in 256 colours at 60Hz refresh rate.

## Screen modes

With the top option of 2Mb VRam fitted, screen modes of 800x600 in 16.7 million colours, 1152x848 in 32,000 colours and 1600x1280 in 256 colours are amongst the many available.

The high-pixel clock rate of VIDC20 provides fast refresh rates and therefore flicker-free desktops even in those, stratospherically high screen resolutions.

These specifications put the Risc PC on par with some of the most exotic graphics workstations this side of £10,000. But this is not the end of the story, as the new DEBI expansion interface allows ultra-fast 32-bit data transfer to and from future graphics upgrades, with up to 16Mb of VRam on board. Serious stuff indeed.

## New software

New software with industry standard compliance to 24-bit graphics standards, such as Photo CD, has been developed to make use of the new graphics capabilities.

A 24-bit Acorn Replay movie viewer with four full-length films will be bundled with each machine, together with over 100 high-quality colour images and a slide show facility.

The enormous Ram capacity will allow the possibility for cost-effective memory upgrading to 16Mb, 32Mb, 64Mb and beyond for high-end users and professionals.

Having broken into the ground of 24-bit colour, 16Mb rather than 4Mb will become the standard for graphics use. For example, Clares recommends at least 16Mb for use with its new Risc PC graphics software.

## Raw power

More colours and greater software versatility does require more processing power. Already the fully benchmarked 30Mhz Arm610 is functionally twice as fast as a 25Mhz Arm3, but in SVGA 256-colour modes, performing graphically-orientated tasks, such as vector redraws, Risc PC is around four times quicker with 1Mb of VRam installed.

The possibility of dual processing using a second homogenous Arm chip could allow tasks to be processed by the second processor, thereby acting as a dedicated graphics engine.

This will open the way for high-speed rendering, image processing and broadcasting quality video/multimedia possibilities in conjunction with future hardware upgrades.

In terms of graphics, the Risc PC has made the most significant and exciting leap in Acorn history.

| | Resolutions | Colours | Refresh rate (Hz) | Pixel rate (Hz) |
|---|---|---|---|---|
| DRam only | 1280x1024 | 4 greys | 60 | 110 |
| | 1024x768 | 16 | 70 | 75 |
| | 800x600 | 256 | 56 | 36 |
| 1MB DRam | 1280x1024 | 16 | 60 | 110 |
| | 1024x768 | 256 | 70 | 75 |
| | 800x600 | 32,000 | 56 | 36 |
| 2MB DRam | 1280x1024 | 256 | 60 | 110 |
| | 1024x768 | 32,000 | 70 | 75 |
| | 800x600 | 16 m | 56 | 36 |

Table 3: Risc PC graphics resolutions

# Risc PC Co-processors

**RISC OS** coupled with the Arm Risc processor family is wonderful, but there are still those who insist on compatibility with tired platforms like PC/DOS and the venerable x86 series of increasingly large, complex and over-engineered processors you see inside boxes on far too many people's desktops.

Sarcasm aside, in the new Risc PC range Acorn has taken the bold step of embracing the compatibility issue wholeheartedly, by providing a second processor card slot on the motherboard, into which you will soon be able to insert a very compact 486-based card. This will run DOS and Windows software just as well as your average 'real' PC. It's expected the 486 processor module will be available in the Autumn.

## New concept

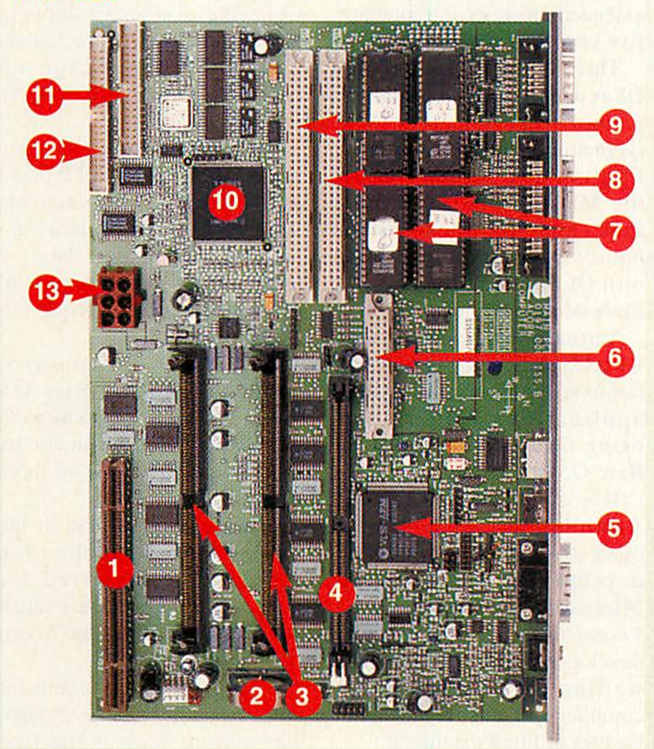
If you think you've heard all this before with Aleph One's 386 and 486 PC podule cards, think again. Creditable and useful though they have proven to be, the thousands of Aleph One PC cards sold were always up against it, as they were fundamentally limited by the original Archimedes' slow 16-bit podule expansion bus. For this application at least, the podule bus did a great impression of a bottle's neck. The new Risc PC 486 co-processor module will be a lot more effective than either the old PC Soft emulator (a version of which runs on the new machine but isn't being developed further) or the Aleph One PC podules.

The new dedicated co-processor slot lets a second processor (shades of the Beeb?) share all the memory and I/O facilities available to the main Arm processor.

In fact you could theoretically remove the Arm entirely and run the foreign co-processor all by itself. The co-processor doesn't have to be a PC-compatible chip – it could be almost anything, including another Arm chip, giving a degree of parallel processing which could be used for faster graphics work, for example.

The romantic connotation that history has turned full cycle with the return of a 'second processor' isn't absolutely valid, as the old Beeb's Tube co-processor bus is architecturally very different to Acorn's new Risc PC Open Bus. Both processors on the Open Bus can be bus masters while the old Tube was a simpler and less-efficient memory-mapped interface.

With Open Bus, the foreign co-processor has essentially the same accessibility to the system as the main Arm




The Risc PC's motherboard

processor. This means that compared to a PC Card podule, a Risc PC 486 co-processor module will run much faster – as fast as a 486 running in a native PC environment.

Naturally, you have to manage system access between the two processors, which is a non-trivial task taken care of by the new IOMD Open Bus controller and a processor-specific ASIC chip on the co-processor card.

In the 486 co-processor module a 28,000 gate ASIC called Sheena has been jointly developed to do the job by Future Technologies in Scotland and, surprise, surprise, Aleph One.

## Performance

At the time of writing, no prototype Sheena ASICs had yet been fabricated and so no actual benchmarking of a real Risc PC 486 processor module is possible. However, the expectation is that a finished product should be ready in the Autumn – in time for Acorn World hopefully. But compared to the original PC podule cards and even real PCs, the 486 co-processor module should go very well indeed.

DOS graphics performance, especially, is expected to be orders of magnitude better because the 486 processor will have direct access to the display memory.

Aleph One says a new Windows GDI driver is being developed with the goal of achieving comparable graphics performance to that of a typical 486 PC running Windows via an S3 VGA accelerator card, with the native Arm doing the graphics acceleration instead.

If your Risc PC is fitted with VRam, it will be even better. Hard Disc I/O is also going to be inherently faster than the original PC cards, though comparisons with Aleph One's latest PC Card podule, which has a local hard disc interface, should be interesting.

Acorn's priorities for the 486 co-processor module are for core PC software compatibility, low price and PC-compatible performance. Acorn wants to offer the 486 plug-in option for as little as £99 on top of the basic Risc PC, if the 486 and Risc PC are bought together. To get an expansion card on its own, you'll have to pay £249, which is still excellent value.

Extras, like PC expansion slot capability and processor upgradability, aren't so high up Acorn's list. Theoretically, at least, someone could develop something as exotic as a Pentium co-processor module with a PCI-bus expansion backplane residing in a spare Risc PC slice with its own power supply.

The ASIC required to manage that would be pretty complex, so a clear market requirement would need to be established first.

If you really want to dream, how about a PowerPC module running Apple's PowerMac version of System 7 or a Digital Alpha processor running Windows NT?

More realistically, Aleph One says it might be in a position to provide the necessary expansion connectivity off the 486 co-processor module for a conventional ISA expansion card system, though this had not been finally decided upon when we went to press.

Undoubtedly, the Acorn Risc PC's co-processor capability is a key feature. It deals with most of the age-old criticisms of DOS and Windows compatibility at a stroke and it will be much cheaper than today's bolt-on PC hardware solutions.

Interestingly, Apple has produced a similar 486 PC processor module for certain Macs with the necessary direct processor bus connector, but it's not available in the UK and it costs a lot of money.

With the necessary commitment, the possibilities are infinite, from plugging in a second Arm processor for graphics acceleration, to adding a processor for specialised digital signal processing.

Effectively, Acorn has future-proofed the Risc PC. There was talk that Acorn had to think long and hard before agreeing to include the second processor slot – I'm glad they did it.

**Ian Burley**

## Jargon box

**PCI – Peripheral Component Interconnect: Intel's new fast local bus standard. Now being popularised in PCs but is actually platform independent.**

**PowerPC – The new Risc processor family produced by the collaboration of Motorola, IBM and Apple. Now features in the new Apple PowerMac range but is not compatible with PC software without software emulation.**

**DEC Alpha – The DEC Risc processor chip. Currently the most powerful single-chip microprocessor available. Faster than PowerPC at the moment, but also just as incompatible with PC software.**

**Pentium – Intel's flagship CISC processor. A very large chip which uses a comparatively large amount of energy, but has the key advantage of running DOS/Windows software natively and very fast.**

**ISA – Industry Standard Architecture: formerly known as the AT bus and the basic expansion card standard for all PCs reaching back to 1982. Out-moded by today's standards but still very popular.**

**ASIC – Application Specific Integrated Circuit: a custom-designed chip.**

**Windows NT – Microsoft's advanced true multi-tasking version of Windows, aimed primarily at server-type systems.**

**IOMD – Input/Output Memory Device. The chip in the Risc PC which controls memory. Equivalent to the IOC and MEMC chips in previous machines.**

**Windows GDI – Graphical Device Interface: a sort of graphics accelerator screen driver for Windows.**

# The Risc PC vs Macs and PCs

SO Acorn's new baby has finally arrived, but how does it really compare with the competition?

The two most likely alternatives are a PC or an Apple Macintosh; former Acorn foes at Atari and Commodore don't appear to be in the frame anymore. Acorn prefers to compare the Risc PC with 486DX2/66 PCs and Apple's new lower-end PowerMac range.

## Choosing

Most people think a PC is the safest bet, but there is a price to pay for safety.

Most new PC software applications are being produced for Microsoft Windows. Compared to Risc OS, Windows can look like a trip backward in time. There is no support for anti-aliased fonts, so text looks relatively unpleasant and far less WYSIWYG than under Risc OS.

Acorn was once criticised for its unattractive-looking Risc OS desktop windows and icons, but has now gone the whole hog with the latest 3D-look designed by a graphic artist, making Risc OS one of the sexiest looking GUIs (Graphical User Interfaces) on any platform.

Windows looks professional, but the look is showing its age, while the Macintosh GUI looks very bland and colourless in comparison, a legacy of the Mac's monochrome origins.

Whole books can be written on the deficiencies of DOS, atop which Windows sits. To summarise, DOS is only a 16-bit system with limited program space, it's very unfriendly and makes a PC system very difficult to configure.

Compared to the Mac's System 7 and DOS/Windows, Risc OS is very frugal with system memory and hard disc resources, as most of it resides in 2Mb of Rom, a traditional Acorn strategy.

A full DOS/Windows installation consumes well over 10Mb of disc space and to make the most of the system it's widely recommended you install at least 8Mb of Ram – which doesn't include video memory.

Apple's new PowerMac comes with a minimum of 8Mb Ram. Until now, I have been running an Archimedes with 4Mb Ram and a 100Mb hard drive and only occasionally run out of memory. A 2Mb Risc PC system is perfectly usable in a modest screen mode.

## Risc OS 3.5

However, are the Risc PC's cosmetics only skin deep? From one point of view, Risc OS remains streets ahead of either Windows or the Mac with its much more committed philosophy of object manipulation.

Most Risc OS applications now offer file dragging operations, which largely obviate the need to type file names or long pathnames. By comparison, Windows' File Manager and the Mac's Finder look like refugees from the mid-1980s, though to give credit where due, the Mac does offer very long and flexible file names.

On the other hand, there are critics of Acorn who point out that Risc OS has not been fundamentally developed and extended since its introduction five years ago.

There is still no sign of any OS-resident applications linking protocols like Windows DDE (Dynamic Data Exchange), or Publish and Subscribe on the Mac. It's only recently that some Acorn software houses have developed their own OLE (Object Linking and Embedding) solutions.

Virtual memory is another Risc OS deficiency which has been solved by individual applications rather than being managed centrally by Risc OS.

It's also frustrating that Acorn has not come up with easy-to-use application-development tools like Microsoft's *Visual Basic* or *Visual C++* – in fact Acorn developers are still impatiently waiting for an Acorn C++ compiler and a better standardised set of library routines.

Complaints that it's much more difficult to write Risc OS applications than on other platforms need to be taken seriously by Acorn, otherwise the growth of the Risc OS software base will continue to be relatively slow.

## Software

Software availability has been Acorn's Achilles heel from the start. The education sector is now well supplied, but the selection of mainstream applications is much narrower than on the Mac or PC.

That said, some applications for Acorn machines are brilliant. For example, Computer Concepts' *ArtWorks* drawing package embarrasses the leading *Corel Draw* package on the most powerful 90MHz Pentium PCs.

*Impression*, from the same stable, is a capable DTP package – though the professional version has yet to be released – and Iota's *DataPower* database system is a superb example of intuitive-applied Risc OS usability.

Digital Arts in Germany is about to launch a Risc OS image manipulation package to give *PhotoShop* a run for its money, and there is a lot more besides.

The message is that all the basic software application categories are catered for under Risc OS – there's much less risk in buying an Acorn system today.

There is plenty of room for software improvement, though. *Impression Style* is the first Risc OS application to include a detailed online interactive help and reference system, a feature that is much more common in Windows applications.

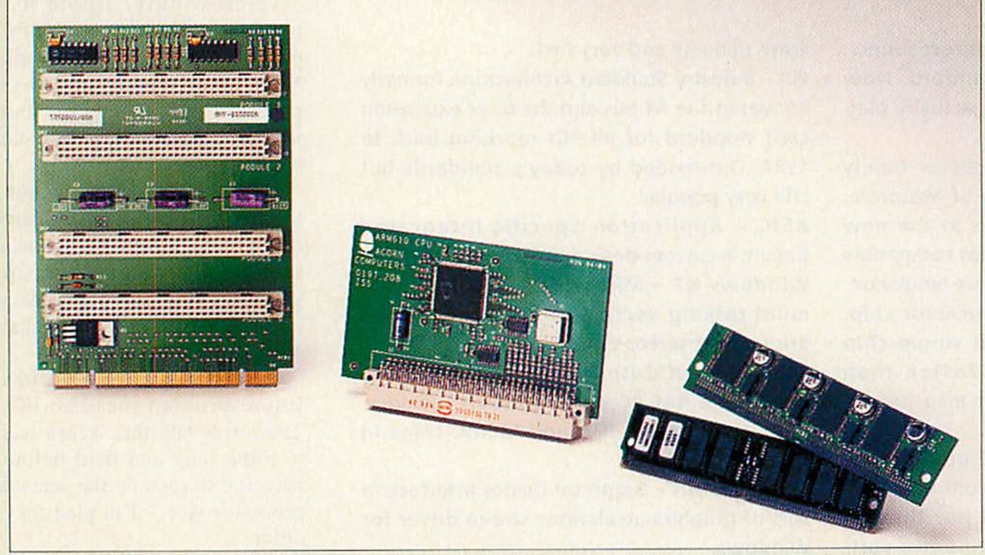
There is also a worrying trend in the Risc OS world for software developers to provide the essentials, but few of the extras you'd expect in PC and Mac applications.

For example, nobody provides grammar-checking for word processing, document outlining and comparing, true multi-dimensional spreadsheets and so on. Acorn has provided the room and incentive for improvement in its new hardware, so now it's up to the developers to go for it.

## Hardware

From a hardware point of view the new Acorn Risc PC is very exciting and Acorn can't be accused of complacency in this area. The new 32-bit DEBI expansion-card system is greatly improved over the original 16-bit podule bus, while retaining backwards compatibility.

It's too early to evaluate DEBI expansion cards but the



From left to right: A four-slot backplane, the Arm610 processor card, and VRam (top)/DRam (bottom)

possibilities are endless, and Risc PC users still have a huge choice of 16-bit expansion cards to choose from.

Of course the Archimedes has had plug-and-play expansion cards ever since 1987, a luxury PC users are only beginning to enjoy now, and only if they invest in the latest PCI bus technology.

Apple's NuBus expansion system is also good but Apple isn't very generous with the number of expansion slots it provides in cheaper Macs. In fact the entry-level PowerMacs only have a single slot. On an Acorn Risc PC you can have up to eight DEBI slots.

If you add enough VRam to your Risc PC you can have up to 800x600 pixels of very fast 24-bit colour screen display; desktops as large as 1600x1200 pixels can be catered for.

PCs with 2Mb VRam accelerator cards also have this capability but Mac display resolutions aren't as flexible, so a smaller monitor means you're restricted to, say, 640x480 resolution.

But Acorn has missed an opportunity to match an impressive Apple Mac feature; an on-board DSP (Digital Signal Processing) chip for really great CD-quality sound.



The new Risc PC keyboard has the same layout as a PC-AT

Instead, users will have to rely on third party add-ons. Compared to the PC world, where even very high-spec PCs still rely on a small 'beeper' speaker, the Risc PC's ordinary 8-bit stereo sound is still a welcome standard feature.

Risc PC accessibility is unrivalled; the case can be opened, the processor or a number of other peripherals like drives or Ram removed and replaced and the case closed again in a matter of a couple of minutes – no screwdrivers are needed. The expanding 'slice' feature is unique in the personal computer world too and the design looks great – another first for Acorn.

## Speed

Performance-wise the Risc PC architecture is very efficient, despite its modest 30MHz clock rate. Most 66MHz 486DX/2 PCs will be matched by a Risc PC where integer work is concerned.

A 40MHz Arm700 would have been the perfect launch processor for the Risc PC, but we'll have to wait until the end of the year for one of those. At least Acorn has promised that upgrades will be affordable and easy – a lot of today's Risc PC machines will probably have Arm800s in them in a couple-of-years' time.

On the other hand, native PowerPC-coded Mac applications will have a significant performance advantage over a Risc PC and a 486DX2/66 PC.

However, the signs are that although older 68000-coded software runs acceptably under 68000 emulation in the new PowerMacs, they don't run stunningly fast and there are still very few native PowerMac applications available.

PC emulation for Apple PowerMacs from Insignia Solutions runs at about 20-25MHz 486SX speed, but doesn't support 386 enhanced mode, which is a serious limitation. When the Acorn PC Card module is ready it will offer true hardware 486 compatibility for less than Apple's software emulation.

## Comparison table for mid-price range

| Machine | Acorn Risc PC Model 2 | Viglen Genie PCI 4DX66 | Apple PowerMac 6100/60 |
|---|---|---|---|
| CPU | 30MHz Arm610 | 33MHz 486DX/33 + 256K cache | 60MHz PowerPC |
| DRam | 4Mb (expandable to 128Mb) | 8Mb (expandable to 128Mb) | 8Mb (expandable to 72Mb) |
| VRam | 1Mb (expandable to 2Mb) | 1Mb (expandable to 2Mb) | None (expandable) |
| Hard disc | 210Mb | 240Mb | 160Mb |
| Monitor | 14in colour | 14in colour | 14in colour |
| Expansion | 2 DEBI slots (expandable to 8) | 7 slots | 1 general purpose slot |
| | 1 Open Bus co-processor socket | (3xPCI, 4xISA, 1 PCI slot used) | |
| Ethernet | £99 | £125 | £90 |
| SCSI | £99 | £120 | Yes |
| Price | £1399 + VAT | £1639 + VAT | £1499 + VAT |

**Notes**

- **Viglen Genie is a top-rated independent PC brand. Unbranded PC clones of slightly simpler specification (VL Bus instead of PCI expansion slots) can be found for around £300 less if you look hard enough and you're willing to trust the supplier. Premium brand PCs of similar specification can be more expensive than the Viglen. Enhanced audio is around a £100 extra for the Viglen.**
- **The Apple PowerMac 6100/60 can't be fitted with less than 8Mb DRam. The older, less-powerful 25MHz Motorola 68040-based Quadra 610 equivalent with 4Mb DRam is about £300 cheaper. The less expandable LC475 with a 25MHz 68040 but 8Mb DRam costs £999 + VAT. Both these Apple Macs are now effectively obsolete.**
- **The Risc PC will be expandable to 256Mb DRam when suitable SIMMs are available.**
- **The General Purpose slot in the PowerMac can take a co-processor or a NuBus expansion adaptor, but can only take cards smaller than seven inches.**
- **Prices given are street prices, except for the Risc PC, which may be discounted through Acorn dealers.**

## Conclusion

The Models 2 and 3 Risc PCs are excellent value for money, and if you want the same level of expandability and features for your equivalent PowerMac, you are looking at a very expensive machine indeed.

Acorn regards PCs as the competition, rather than the new PowerMac, and I have to agree; the PowerMac is more expensive, but PCs can still be regarded as a serious threat.

**Ian Burley**

# Risc PC products

**MOST** Acorn developers are agreeing that the Medusa project – Acorn's code-name for the Risc PC – has been the best managed Acorn project ever, and this means that there are a number of products, specifically designed to make the most of the Risc PC's capabilities, being released at the same time as the machine.

## Hardware

In general, the most interesting new developments are on the hardware side, as that is the area which has been expanded by Acorn with this new machine.

Aleph One – (0223) 811679 – is developing the PC Card for Acorn, so it's no surprise that the main new products from Aleph are PC-related.

The PC Card will not be ready until around October, and it is not yet clear whether there will be faster versions of the card available then: the main aim is to get the Acorn card developed and working.

There is a possibility that a range of cards will be available using various members of the 486 chip family, but it's too early to say. Aleph has updated its existing PC cards considerably to enable higher clock-rate chips to be installed, as well as the ability to add a local IDE drive to the card to improve Windows performance.

These cards are not specific to the Risc PC, and the PC Card will be a better option when it is available.

Atomwide – (0689) 838852 – is launching three new products for use with the Risc PC. The first is a fast Ethernet card to go in the network slot, providing 10BaseT and 10Base2 networking at a faster rate than the 16-bit expansion cards currently available.

Atomwide will also be selling an eight-slot backplane kit, enabling you to expand your Risc PC to eight expansion slots, complete with a second power supply and the extra case segments you need. One bonus is that DMA channels can be accessed by four slots, not just two as is the case with Acorn's kit.

Finally, Atomwide will be selling VRam and DRam upgrades, the latter being available in two forms: cheaper PC-standard SIMMs, and more costly upgrades which, however, conform to Acorn's standards.

Calligraph – (0223) 461143 – says its range of direct-drive laser printers will work with the Risc PC, and will be even faster and more usable with the extra memory available. The A3 and A4 1200dpi printers are said to be far more flexible under the new system.

Cumana – (0483) 503121 – is launching two new products. The first is a 32-bit SCSI 2 board, which supports DMA, and yet is backwardly compatible with previous machines.

Not only does it have a flash Eprom, so software upgrades can be performed from floppy (like on Cumana's EMU interface), but the on-board logic is also programmable to provide a totally future-proofed system.

The second product is an internal IDE CD-Rom drive, which will provide a CD-Rom upgrade for the Risc PC at PC-type prices. The drive is a double-speed, multi-session Photo CD mechanism, with an exceptional performance.

Millipede Electronic Graphics – (0284) 850594 – is releasing a new version of its professional APEX Imager board for the Risc PC, turning it into a very powerful video-graphics workstation.

Live video can be manipulated in real time, in full colour at 32 bps. The APEX will hopefully be available in May for around £3300 + VAT, and Millipede is working on more products for the Acorn platform.

Morley – 091-257 6364 – is releasing an internal version of its Revolution drive for the Risc PC, which will be cheaper than the existing drive as you don't need to pay for a case.

SJ Research – (0223) 416715 – will be launching two new products. The first is a version of its existing A5000 Nexus network board, which will work in any of the eight slots possible in a Risc PC. The second is a Risc PC-only network card which fits in the network slot in the base unit, and apparently it is very fast indeed.

## Software

On the software side, things are slightly more quiet. Most companies have already tested their products on Risc OS 3.5, and will provide upgrades if necessary.

Some software companies, like Computer Concepts and Oak Solutions, have been future-proofing their software for some time, so it's just a case of 'it works, and can cope with 24-bit images'.

Clares – (0606) 48511 – on the other hand, has well-and-truly grasped the Risc PC nettle with a superb new 24-bit version of *ProArtisan* called *ProArt24*.

The tools are extremely realistic, with charcoal, pastels, felt tips and so on. A novel new feature is the ability to render *Draw* files using any brush, so you can 'charcoalise' your vector pictures. The launch price is £170 inc. VAT, and includes the ability to load Photo CD images directly.

Another Risc PC-specific product from Clares is *Compo*, a composition tool which allows you to treat 24-bit images as objects, with 256 levels of transparency or 256 levels of tint, and a huge range of effects. The price has yet to be announced.

Computer Concepts – (0442) 63933 – has already been future-proofing its products, as mentioned, and *ArtWorks* and *Impression* benefit from the 24-bit colour system and larger screen modes.

One important point is that old Qume LaserDirect cards and the FaxPack do not work on the Risc PC, and no upgrades are available. The ColourCard also doesn't work, but as it would be redundant that's not a problem.

Another company which has welcomed the Risc PC with open arms is Gnome Computers – (0480) 406164. Gnome specialises in the research department area and has updated its X server to use the full graphics capabilities of the new machines, particularly the 1280x1024 256-colour screen modes.

The ability of the Risc PC to display pictures in true colour in this mode puts it streets ahead of the competition, and



Compo from Clares

Gnome says that the price of the Risc PC makes it a serious competitor in the X terminal stakes.

Also updated is the SLIP driver for the serial port under Acorn's TCP/IP suite: it can now take advantage of the faster serial port which can drive V.Fast modems.

Longman Logotron – (0223) 425558 – is to release an updated version of *Eureka*, with the superb feature of being able to load and save *Excel* 3 and 4 files, with all formatting retained.

Needless to say *Eureka* can also handle 24-bit graphics on the worksheet, and incorporates OLE with *Impresssion*, so you can drop a *Eureka* sheet into *Impression* and reload it into *Eureka* with a double-click.

Minerva – (0392) 427756 – is updating its *PrimeMover* animation package for use with Risc PC, though it remains backwardly compatible. Interestingly, Minerva is releasing two versions – a cut-down version and a full version – so primary schools don't have to shell out for features that they might not want.

The high-end version will be much smoother on the new hardware, and will take advantage of bigger screen modes and more colours. On the subject of animation, Iota – (0223) 566789 – has updated *Image Animator* for use with all the new Risc OS 3.5 modes, so you can create 24-bit colour films and play them in any mode. *DataPower* is also 24-bit capable.

Finally, there is a serious spate of photo-retouching packages being released. Oregan, Digital Arts and Spacetech are among those vying for the *PhotoShop* slot, and we hope to bring you full details of these as they become available.

**Mark Moxon**

# Risc PC and Education

EACH year, as a head of IT, I see dozens of parents with numerous questions about IT and computers. The one question which I'm asked time and time again is: 'Are these computers PC-compatible?' by which I assume they mean: 'Can you run the same software as I do in my office?' The only honest answer to that is: 'Probably, but I don't really know.'

There is another version of the same question which includes the phrase 'industry standard', but I'm never quite sure whose industry we're talking about.

I assume what people are asking is: 'Are you preparing students for later life by providing equipment that they are likely to use?' But what *will* they use in later life?

## User interface

Looking at existing technology, it seems reasonable to assume that future systems will be driven by some form of GUI (Graphic User Interface), but these change so rapidly that whatever is taught today will probably be out of date by the time our present students have left school.

On that basis I don't feel that Risc OS is any better or worse than any other GUI. It's also reasonable to suppose that the keyboard will continue to be the preferred method of text entry, in spite of attempts by Apple to introduce an alternative which I really can't see coming into general use for many years.

The actual make of computer used in schools is of limited relevance, especially when used in a cross-curricular role, where they are as much a teaching aid as a tool and are not introduced for their own sake nor are they used to train students for particular commercial purposes.

And what of the software? How many people have walked into a travel agent and seen *Microsoft Windows* on the terminals, entered a building society and seen the teller complete a transaction using *Lotus 123*, or visited the parts department of a car dealer and watched the part you require located with *DBase 3*?

Industry standard is a myth – there isn't one, I don't believe there ever was one and I don't envisage there ever will be one.

## Why Acorn?

So, back to the question, why choose Acorn? When I was interviewed for my present post, Head of IT, one of the carrots that was dangled in front of the candidates was £10,000 to begin to re-equip the school with computers.

I was given a free hand in choosing the computers and so, after much deliberation, I chose Acorn – a decision I still feel was the correct one and one that I would make again.

The reason is simple. Acorn has declared itself to be fully supportive to the education market and it has a proven track record in that area. Some other manufacturers dabble in education, but not very consistently nor, it seems to me, very convincingly.

Several software houses have taken Acorn's lead and have produced for the Archimedes some of the finest education software available for any platform.

When I say education software I don't mean software written for another purpose, which happens to find its way into a classroom because it more or less fits the bill. I mean material which has been written specifically for the needs of children by people who are initially in the business of teaching.

Just look at the history material I reviewed this month and last. Most of it is not PC-compatible (although some has now been ported onto PCs and Macs), but who says that this material is not valid or will not provide a sound educational experience just because it doesn't conform to the mythical industry standard?

One of the other factors we, as teachers, must consider is cost. The initial cost of buying the computers is only part of the equation. After committing a school to a particular platform, the cost of upgrades to those computers, the repairs and the cost of the software all have to be met.

Only when it comes to upgrades do I think we, as Acorn users, are sometimes slightly overcharged. But I can live with that – especially when one considers how much software really costs.

I use *Impression* on my 50-station network and 15 stand-alone machines. I've spent just over £1000 for this piece of software. We also have Apple Macs in school and someone asked me to buy *Aldus Pagemaker* for them. The education price was £999 – but for only 10 copies! Worse is to come. Last year, both Computer Concepts and Aldus released fairly substantial upgrades to their products. In fairness, I think the *Pagemaker* upgrade was a little more radical, but Aldus wanted over £600 for the upgrade.

Computer Concepts charged £20. Even the upgrade from *Impression* to *Impression II* for 30 computers was only £80.

Having said that, if you really want to run PC software, there is a PC Emulator which basically makes the Acorn computer think it's a PC. Even better, the new generation Risc PC will have an easy to fit – and cheap – hardware upgrade, enabling the computer to not just act like a PC, but to become a PC.

If parents are choosing a computer for home, they would be wise to consider this, as it will enable the children to do their homework on the Acorn platform and Mum and Dad to do their homework on the PC platform.

So, for those schools who are thinking of changing from Acorn to something else, be warned. The best computer is the one which will run the software you want to use.

Don't be swayed by people who claim to be experts and say you should follow the industry standard. Look at the educational software around and see if it really is suitable.

Look also at the cost of buying and maintaining 'industry standard' generic software like databases, word processors and the like.

You will have to dig a long way into your pockets both to buy and then sustain another platform.

**Geoff Preston**




## Version 1.5

The latest version now includes full support for 24-bit sprites, making it the first Acorn graphics package to support full colour sprites. It is also compatible with the new graphics filter system used by Impression and includes a filter for TIFF files (the industry standard format). ArtWorks now includes the ability to print and separate these full colour images. Finally 1.5 is also a new 'fast load' version of ArtWorks - this is an advantage to all users but particularly useful for relatively slow filing systems such as CD or networks.

*"ArtWorks is quite simply the best vector drawing software on the Arch"*
*Computer Shopper*




*"It's the best ever art program to hit the Archimedes".*
*Archimedes World.*

Upgrade to 1.5 from earlier versions £10.00 + VAT (£11.75 incl.)

RRP for normal 1.5 full package £169.00 + VAT (£198.57 incl.)
RRP for the CD version of 1.5 (includes everything on the clip-art disc) £169.00 + VAT (£198.57 incl.)
Upgrade from the floppy disc version to CD version £29.00 + VAT (£34.07 incl.)

**To mark the release of ArtWorks version 1.5 we thought we would take the opportunity to remind you of some of ArtWorks most outstanding features:**

• Full anti-aliasing of drawings to give superb on screen quality • infinite undo, so no mistake is final • ultra fast screen re-draw • an easy to use toolbox • fast and easy to use graduated colour fills • a blend tool for tweening or morphing • an envelope tool for all sorts of distortions • a perspective tool to rotate in 3 dimensions • a text tool to enter text in any font, any angle any size - and the text remains editable on the page even after graduated fills • text around a curve • a freehand line drawing tool • the ability to break complex drawings into a number of layers • read and write file compatibility with CorelDraw, Illustrator, Freehand and various Acorn formats • ArtWorks files can be dropped straight into Impression and other major Acorn WP/DTP packages • print tiling allows poster sized prints • compatibility with all RISC OS printer drivers (including Computer Concepts 24bit colour drivers) and PostScript printers • zoom in and out • multiple window views of any drawing • interactive object dragging, scaling, rotating • a large collection of sample clip art included free • 220 high quality outline fonts included free.

**ClipArt CD VERSION**

As a result of the ArtWorks clip-art competition, we received over 700 quality entries - this CD contains the best of them and many more ArtWorks examples (and the ArtWorks Viewer so that non-ArtWorks owners can view them). The illustrations can be used by anyone for incorporation into a growing range of Acorn applications that can take ArtWorks files. The disc also contains dozens of 24-bit high quality photographs (ideal for use with the 24bpp version of Impression and ArtWorks 1.5) and a demonstration version of AudioWorks with example audio files.

RRP £19.00 + VAT (£22.32 incl.)

*"In short, it is amazing"*
*Archive*



A full 8 page specification on ArtWorks is available on request.



Computer Concepts Ltd

**Gaddesden Place**
**Hemel Hempstead, Herts HP2 6EX**
**Tel.: 0442 63933 Fax: 0442 231632**
**EMAIL: Info@CConcepts.co.uk**

## Magic mouse

Thank you for the advice you gave me in reply to my letter of 5 February, namely that I try a Clares mouse to replace my ailing Acorn rodent. I received your letter on Tuesday morning and rang Clares that afternoon to order a mouse by credit card.

Imagine my surprise when it arrived the next morning, less than 24 hours after placing the order. A 'well done' to Clares.

The mouse has a quality feel about it and is a delight to use. I managed to save the first Lemming tribe with all 60 lemmings alive and well at the end of the ten screens, something I simply couldn't do with my old mouse. Let's hope it is still as good in a years time.

**Richard Godfrey**
**Godalming**

**It's interesting how many people have written recently about trouble with their mice. It's a universal problem across every mouse-driven platform. Let's hope one day someone invents a trouble-free mouse.**

## Foreign formats

I am writing to say that I totally agree with Mr Emery (see Letters, March 1994) with regard to file exchanging between different machine formats. I am very annoyed that Acorn is using our money on finding ways to cripple its machines by putting PC hardware alongside Acorn hardware.

Imagine the situation: you have *Impression Style* loaded on your nice, fast, easy-to-use Risc OS desktop, ready to create a document, but you realise you might, one day, want to give this document to a PC user, to print it, for example.

So you buy a PC card, fork out for DOS, Windows and a much inferior DTP package, and struggle to install this software, which will, of course, eat up many megabytes of your hard disc.

You then struggle to create a document and end up with a piece of work that could certainly be better. Now, if *Impression Style* had the ability to load and save foreign file formats, I could create my document with a lot less fuss, and without spending any more money.

I still think file compatibility should be high on the list of Acorn priorities. Rather than having individual converter programs, software should be able to import and export files, like *ArtWorks* does.

Perhaps Acorn could introduce a 'seal of approval' for software which complies fully with the Style Guide and which can import and export most files. I certainly wouldn't buy any software that didn't comply.

**Mathew Taylor**
**Devon**

**In the case of vector graphics programs, file conversion is entirely feasible and has been implemented in *ArtWorks*, for example. The same applies to spreadsheets, where most spreadsheets can load Lotus files. However, DTP file conversion is a different kettle of fish altogether, and would require a serious amount of work to put together.**

**I think that complete file import and export from *Impression* is a pipedream, but implementing, for example, support for RTF files would be a serious step in the right direction.**

## Samsung SVGA

I refer to your monitor review in the March issue which I found very clear and informative. However, I would like to add a few points that might clarify the situation with SVGA monitors and older screen modes.

Acorn has provided a suite of modes for SVGA monitors within Risc OS 3 and the circuitry in the latest Acorn models is capable of driving SVGA monitors.

Risc OS 3 also emulates standard resolution modes – like 12 and 15 – on SVGA monitors, but to do this the modes use two-thirds of the scan lines, so the picture appears in so-called 'letterbox' mode. The Samsung monitor, and I suspect the others mentioned in the review, is able to display in letterbox mode, and crucially the Samsung monitor allows the picture's vertical height to be adjusted so the picture fills the screen. Some outdated software may not take advantage of the SVGA modes in Risc OS 3, either because the software was written before Risc OS 3 appeared and has not been updated, or the software does not conform to Acorn's guides.

We are in the process of compiling a comprehensive list of available software which will and won't work on SVGA monitors. If any reader would like a copy of this list, please send an SAE to me at Castle Technology, Ore Trading Estate, Woodbridge Road, Framlington, Suffolk IP13 9LL.

**Jack Lillingston**
**Castle Technology**

**One point to note: we couldn't get any of the SVGA monitors to work in letterbox mode on an old machine with a VIDC enhancer fitted, even with Risc OS 3 fitted. Do check with the supplier that the monitor will definitely work with your particular machine.**



Back in the good old days, AU was created in *Impression*...

## Club CD

With the dearth of CD-Roms available specifically for the Archimedes, we have decided to form the Archimedes CD Club. Its aims are:

- To inform members which Archimedes CDs are available and which PC CDs are worth buying, with or without the PC Emulator
- To be able to offer these CDs at discounted prices
- To have an exchange situation where members can swap CD-Roms.

We would like to hear from anyone who has, or is thinking of buying a CD-Rom drive. For more details write to Desktop Laminations, PO Box 332, Bristol BS99 7XL.

**David Rees & Peter Hughes**
**Archimedes CD Club**

## Minerva missed

I was rather surprised by an article in the Graphics section of your March issue.

Why? There is no mention of *PrimeArt*, *Atelier*, *CADet* or *ProCAD*. All of these are established packages and all have received excellent reviews from your magazine and others.

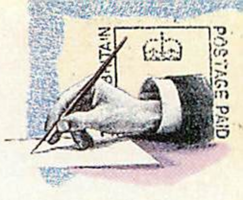
We have recently repositioned the prices of Minerva products and all the above are remarkably good value for money for both home and educational users.

I am sure that this omission of our software packages was not intentional. However, I would appreciate you mentioning to your readers that there are other packages out there and that those mentioned were just a few of the many good art and draughting software packages available.

**Pat Cleaver**
**Minerva Software**

**Just a few points in reply. First, we were only actually covering packages for creating artwork, which rules out *ProCAD* and *CADet*.**

**The article was also not intended to be comprehensive, and was in fact a compilation of recommended packages. The authors felt *Atelier* was too dated to recommend, and that *PrimeArt* was too expensive for a beginner's art package for**



**the home. Now the prices have come down, *PrimeArt* is worth considering.**

## 8-bit compilation

Before users of 8-bit Acorn micros completely disappear, I should like to mention, in case any of them are interested, that I have just compiled a collection on disc of articles and programs for the 8-bit range.

The text covers some programming techniques, and manuals for the programs, which are immediately usable from disc, and which range from the light-hearted to the really serious.

I can't afford to give this disc away, but it can be bought from me at 4 Lalor Street, London SW6 5SR for £14.50 inclusive. So far it is ADFS only, on 5.25in or 3.5in (please specify).

**Ruben Hadekel**
**London**

**And with that, *Acorn User* sheds a tear and promises never to mention the Beeb again. Sob.**

## No GNU

In the February issue, you contradicted yourself in mentioning that (a) there is no C++ compiler for the Archimedes and that (b) the GNU C++ compiler 2.3.3b is available from HENSA, but still has many bugs. I have just issued the second release of GCC 2.4.5, which is a significant improvement over 2.3.3b. This is available from the HENSA archive server, replacing the previous release.

For those without Internet access, GCC can be obtained by sending three 800K ADFS floppy discs and return postage to: Simon Callan, 2 Malden Road, Borehamwood, Herts WD6 1BW.

GCC 2.4.5 is fully APCS-R compliant, and can be used with the standard Acorn C libraries, or with the UnixLib library (which is supplied with GCC). There are bugs, but these are minor and are more of an annoyance than a problem.

**Simon Callan**
**Borehamwood**

## Mac user

When I visited the *Acorn User* show many months ago, Acorn was demonstrating the publishing of *Acorn User* magazine using Risc machines. I have now reason to believe that you no longer use Acorn computers, and in fact use Apple machines. Is this true?

I am disappointed that you have stopped what was a great demonstration of the machine's capabilities. Why did you change?

**Steven Abrahart**
**Surrey**

I read with some dismay your Blunderbox in the March issue. It seems that the magazine is no longer exclusively produced on Acorn machines, as was clearly stated when the magazine was BBC owned.

Since Europress also publishes magazines for the PC and Amiga and this magazine is now produced on Apple Macs, I can't really see the point of calling it *Acorn User* any more. I am seriously considering dropping my subscription to your magazine and am urging others to do the same.

**Alan Clarke**
**Jersey,**

**See Viewpoint.**

## PC friendly

I have been reading with great interest the rumours about the next generation of Acorn machines, particularly their support for multiple processors. I believe this to be a stroke of genius from Acorn, as the second processor could be from a PC.

Now PCs are, I know, ghastly, but they are growing in popularity due to their compatibility, speed and games – sorry, great games.

Acorn machines are definitely superior with the excellent Risc OS, and have easier programming, greater efficiency of power and memory, but they lack the quality leisure software written for PCs, and forget about PC conversions – the Acorn market is simply too small to justify them.

So the only answer is to have optional 100% PC compatibility. Acorn users would not be tempted to buy PCs for games, and more importantly, would-be PC users could buy Acorn machines, which would, I believe, wean them off non-leisure PC software, seeing that there is more to life than DOS and Windows. Let us hope then, that Acorn is working on full PC compatibility.

I believe there will come a day when we shall stop looking with envy at the enemy's truly excellent PC games such as *Formula 1 Grand Prix*, *Shadow Caster* and *Day of the Tentacle*, to name but a few. Instead, we shall become 'PC friendly' and they shall look with envy at our machines...

**Dickon Channing**
**Edinburgh**

**Looks like there's going to be at least one very happy Risc PC customer, then...**

**Drop us a line at Acorn User, Europress Enterprise Ltd, Europa House, Adlington Park, Macclesfield SK10 4NP**

## Viewpoint

Welcome to Viewpoint, the new spleen-venting section of our expanded Letters page. In this area I'll be picking up on points you've raised in your letters, and will put my oar in and try to expand on what you think. And this month the topic is particularly sensitive, judging by the letters we've been receiving.

In case you didn't know, up until the December 1993 issue *Acorn User* was typeset using *Impression* on Acorn equipment – if you want the full details, have a look at the article back in August 1991.

However, now that we are based at Europress rather than Redwood, we are produced on an Apple Macintosh, and not surprisingly some of you are a bit put out by this.

The reasons for the change have nothing to do with the ability of Acorns to produce the magazine. *Impression 2* may have had its weaknesses, but the imminent arrival of *Impression Publisher* with its OPI supplement will remove most of the problems we encountered.

The problem lies in the way magazine publishers work, and highlights an interesting challenge to Acorn in its publishing market. There are two important points. The first, which is easier to overcome, is that the vast majority of art editors in the country are trained on Macs and PCs, using packages like *QuarkXPress* and *Illustrator*. If we were to advertise for an art editor who knows *Impression* and *ArtWorks*, the response would be very small, and the number of artists who would willingly move from the CV-friendly Mac to the relatively unknown Archimedes is tiny.

The second, and more important reason is that Europress uses the common technique of having a pool of art editors. Most art editors are based on just one title – Carl, our art editor, spends the vast majority of his time on *Acorn User* – but if there is a time in the month when one magazine has a small workload, the art editor can help out on busier titles.

If one or two magazines were based on different technology, this couldn't happen, and the chances of persuading a whole company to switch its entire computer system from Mac to Acorn is slim, if only because of the immense cost of the operation.

No-one is sadder than me that we don't use *Impression* any more. Converting screens to TIFFs, transporting text in RTF format: it's a pain. But if Acorn is to make an inroad into publishing, its supporters must be aware that most of the battle doesn't depend on the machine's capabilities, it's mainly down to politics and finances. Be realistic.

**Mark Moxon**

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MAY

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EEC add 17.5%vat to all prices except books. Prices and specifications subject to change without notification. Carriage is free (Except for books/Software/Risc-OS 3.1 & PRM's) these will be shipped at cost. Goods offered subject to being unsold and/or available. Goods not offered on non-stock items. Next day delivery please add £12 + vat. Otherwise All goods shipped within 48 hours subject to availability. Restocking fee on non-defective returns.

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Toshiba3401 Fastest Drive On The Market Photo CD Compatable, MultiSession And Double Spin Speed.
External Unit £499
Toshiba4101B Twin Speed Photo CD Compatable, Multisession.
External Unit £399

## OPTICAL DRIVES

Fujitsu Optical Hard Drive (SCSI) 128meg Removable Discs That Are Read/Write With A Data Transfer Rate Of 600k/Sec.
Internal Unit (A5000) £649
External Unit £749
128meg M/O Discs £30

## SCSI/IDE CONTROLLERS

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Acorn Multi AKF52 £269
Microvitec Multi-Sync £399
Taxan 875 £859
Taxan 795A £489

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ARM 3 Upgrade with FPA socket £169
Turbo Driver CANON / DESKJET £49
Dongle Dangle £7
Dust cover (Keybd + Monitor) £12
Acorn Floating Point Upgrade Pack £99
Hawk V9 Video Digitiser £199
I/O Expansion Card £79
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Risc-OS 3 Carrier Board 300/400 £21
Serial Upgrade A3000 £20
VIDC Enhancer (State Machine) £32
Vision Digitizer Mono Int £59/Ext £79
Vision Digitizer Colour Int £79/Ext £89

## BOOKS

Acorn Education Directory £4.95
Archi Assembly Language £14.95
Risc OS 3 First Steps £14.95
Archi Operating System £14.95
C: A Dabhand Guide V.3 £16.95
Control On The Archimedes £9.95
ArtWorks Made Easy £14.95
BBC Basic Guide (NEW 3.10/11) £19.95
Budget DTP £12.95
DabHand Guide To Impression £14.95
Game Makers Manual £14.95
Graphics On The Arm £14.95
Guide To Wimp Programming £14.95
RISC-OS 3 PRM's £99
RISCOS Style Guide £10
AASM Manual (Acorn) £25
ANSI C v4 Manual (Acorn) £25
DDE Manual (Acorn) £25
A540/A5000 Tech Ref Manual £65
A3000 Technical Ref Manual £30
First Impressions (With Discs) £35
Good Impressions (With Discs) £31

## PRINTERS

CANON BJ-10SX / Turbo £189/£235
Canon BJ-10 Ink Cartridge £17
SheetFeeder for BJ-10E/EX/SX £57
Canon BJC600 Colour With Turbo £499
Canon BJ800 Colour With Turbo £1489
Refills for BJ10/DJ(Twin) BW/Col £12/£13

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130 meg 2½ Internal Toshiba Drive With MultiPodule (2 Slot A3010 / 3 Slot A3000) IDE Interface, Power Supply, Fan, And Buffer Kit.. £419

## RAM UPGRADES

A3000 IFEL 2 meg. £55
A3000 4 meg. £159
A3010 2/4 meg. £49/£149
A3020/A4000 2 To 4 meg £89
A400 RAM per meg. £49
A5000 2 To 4 meg. £89
A540 4meg upgrade £399

| Drives | IDE | SCSI |
|---|---|---|
| 170meg | £199 | £249 |
| 210meg | £209 | £269 |
| 340meg | £350 | £399 |
| 545meg | £575 | £599 |
| 1 gig | £..... | £999 |
| 1.3 gig | £..... | £1099 |
| 1.6 gig | £..... | £1199 |
| 2 gig | £..... | £1299 |

Case For 2 gig Drive £145
For External Drives Please Add £89 For-Case And Cables.

## CD-ROM SOFTWARE

ArtWorks (CC) £169
ArtWorks ClipArt CD (CC) £20
ProArtisan 2 Call
Reverlation 2 CD-ROM Edition £130
Gifs Galore £20
KeyPlus3 (Anglia Television) £60
KeyNote2 (Anglia Television) £28
Human Biology Needs KeyPlus/Note £40
Castles, Needs KeyPlus or KeyNote £40
British Birds (Interactive Learning) £150
Counties Of Britain (Anglia) £40
Countries Of The World (Anglia) £40
Creepy Crawlies (Media Design Ltd) £99
Dictionary Of The Living World (MD) £175
Granny's Garden (Cumana 4Mation) £34
Image WareHouse (Media Design) £59
Illustrated Holy Bible £25
Illustrated Works Of Shakespeare £25
Hutchinson Electronic Encyclopedia £99
Really Useful CD-ROM Vol 1 £49
Really Useful CD-ROM Vol 2 £49
CD Lens Cleaner £6
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## ACORN COMPUTERS

A5000-2meg 210meg Hard Drive. £1276
A5000-2meg 210meg Hard Drive Learning Curve System. £1318
A5000-4meg 210meg Hard Drive. £1445
A5000 4meg 210meg Hard Drive Learning Curve £1488
A5000-4meg 210 Hard Drive Home Office System. £1531
A4000-Home Office System. with ARM 250 Processor, Acorn Colour Monitor, 105meg Hard Drive. EasiWriter 2, Desktop Database. etc. £935
A4000 Home Office (As Above) With Acorn MultScan. £977
A4000-2meg 105meg Hard Drive. £850
A4000-2meg 105meg Hard Drive Learning Curve System. £892
A4000-2meg 105meg Hard Drive MultiScan Monitor. £892
A4000-105meg Hard Drive Learning Curve MuliScan System. £935
A4-4meg 60meg Hard Drive. £1699
A4-2meg Floppy Drive System. £1299
Acorn pocket book. £189
A3020 2meg Floppy Disc System Acorn Colour Monitor. £675
A3020 2meg Floppy System With MultiScan Monitor £717
A3020 2meg 60meg Hard Drive System With Acorn Colour £825
A3020 2meg 60meg Hard Drive System With MuliScan £867
A3010-Action Pack. £339
A3010-Learning Curve System. £637
Upgrade AKF52 (MuliScan) To AKF50 (MultiSync) *** £79
Upgrade Acorn Colour Monitor To AKF52 (MuliScan) *** £49
Upgrade Acorn Colour Monitor To AKF50 (MultiSync) *** £115
Upgrade AKF52 To MicroVitec CubScan 1440 MuliSync *** £205
*** Only Apply's When Purchasing Any Of The Above Systems

## ACORN UPGRADES & PERIPHERALS

Acorn Pocket Book A-Link (Requires RiscOS 3.1) £42.50
Acorn Pocket Book Parallel Link £25.50
Acorn Pocket Book RAM Disc (128k) £51.00
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Acorn Pocket Book Mains Adaptor £12.75
Acorn Pocket Book Flash Disc (512k) £85.00
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Acorn Schedule Class Pack £169.80
A4 Battery Pack £50.00
A4 Econet Upgrade £50.00
A4 Shoulder Bag £35.00
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Acorn Scsi Mk 3 Adaptor Card £250.00
Acorn FSCI/CDFS Upgrade Kit £20.00
Acorn I/O Expansion Card £85.00

## THE ULTIMATE EXPANSION SYSTEM A3000

A3000 MultiPodule 3 slots+User Port+HD space £40
A3000 MultiPodule 3 slots+User Port+HD space+IDE i/f+PSU £99
A3000 MultiPodule 20meg HD+3 slots+User Port+PSU £209
A3000 MultiPodule 40meg HD+3 slots+User Port+PSU £249
A3000 MultiPodule 60meg HD+3 slots+User Port+PSU £269
A3000 MultiPodule 80meg HD+3 slots+User Port+PSU £309
A3000 MultiPodule 120meg HD+3 slots+User Port+PSU £419
A3000 MultiPodule 170meg HD+3 slots+User Port+PSU £509
A3000 MultiPodule 250meg HD+3 slots+User Port+PSU £589
A3000 IDE Interface + User Port £72
A3000 MultiPodule IDE KEY £30

## THE ULTIMATE EXPANSION SYSTEM A3010

A3010 MultiPodule 2 slots+User Port+HD space £40
A3010 MultiPodule 20meg HD+2 slots+User Port+PSU £213
A3010 MultiPodule 40meg HD+2 slots+User Port+PSU £255
A3010 MultiPodule 60meg HD+2 slots+User Port+PSU £275
A3010 MultiPodule 80meg HD+2 slots+User Port+PSU £315
A3010 MultiPodule 120meg HD+2 slots+User Port+PSU £419
A3010 MultiPodule 170meg HD+2 slots+User Port+PSU £511
A3010 MultiPodule 250meg HD+2 slots+User Port+PSU £589
A3010 IDE Interface + User Port £99
A3010 MultiPodule IDE Key £30

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Vision Colour Digitizer MicroPodule £99
Analogue MicroPodule £30
Scsi (Including CDFS 2.20) MicroPodule £70
Colour Video Out MicroPodule £50
Midi + HQ Sound Sampler MicroPodule £70
Hivision Colour Digitizer MicroPodule £150
Midi MicroPodule £50
HQ Sampler to fit Midi MicroPodule £40
A3010 CC ScanLight 256 Podule Only £99
A3000/3020/4000 CC Scanlight 256 Podule Only £99
A3010 CC ScanLight 256 Podule Only £99

## 2 ½ IDE H-D UPGRADES FOR MULTIPODULES

20meg IDE HD for MultiPodule (No PSU Kit) £139
40meg IDE HD for MultiPodule (No PSU Kit) £175
60meg IDE HD for MultiPodule (No PSU Kit) £185
80meg IDE HD for MultiPodule (No PSU Kit) £225
120meg IDE HD for MultiPodule (No PSU Kit) £325
170meg IDE HD for MultiPodule (No PSU Kit) £435
250meg IDE HD for MultiPodule (No PSU Kit) £485

## ULTIMATE STARTER PACKS

Ultimate starter packs include the Mutipodule to fit inside the Computer, a MicroPodule, Interface leads and a PSU when required.

A3000/3010/30204000 CC ScanLight 256 £299
A5000/400/300 CC ScanLight 256 £250
A3000/3010/3020/4000 CC ScanLight 256 & Colour Vision £374
A5000/400/300 CC ScanLight 256 & Colour Vision £374
A3000/3010/3020/4000 CC ScanLight 256 & HI-Vision £399
A5000/400/300 CC ScanLight 256 & Hi-Vision £359
A3000/3010/3020/4000 SCSI (Includes CDFS 2.20) £130
A3000/3010/3020/4000 Colour Vision £159
A3000/3010/3020/4000 Midi £109

## ULTIMATE CD-ROM DRIVES

A3010 MultiPodule Dual Speed CD-Rom Drive & uPodule £289
A3000/3020/4000 Dual Speed CD-Rom Drive & uPodule £289
A5000 MultiPodule Dual Speed CD-Rom Drive & uPodule £289

## VISION VIDEO DIGITISERS

A3000 External Vision Colour Digitiser £112
A3000 HiVision Colour Digitiser £165
A3000/3010/3020/4000 Vision Colour Digitiser £99
A3000/3010/3020/4000 HiVision Colour Digitiser £150
A5000/400/300 Vision Colour Digitiser £99
A5000/400/300 HiVision Colour Digitiser £150
Upgrade Mono To Colour £70
Upgrade Colour To HiVision £60
Upgrade Mono To HiVision £120

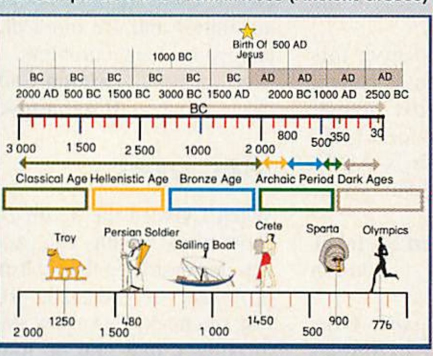
## ULTIMATE MULTIPODULES

A5000/400/300 2 slot MultiPodule (Up to 8 slots in Machine) £40
A3020/4000 3 slot+User Port MultiPodule £40
PSU+Fan+Buffer Kit A3010 / A3020 / A4000 /A3000 £30
Case for External Expansion Card £16
A3000 Second Floppy Drive Interface £25
A3000 T.V Modulator + Colour Video Out £40
A400 Second Floppy Drive Interface £25
A3020/4000 Econet Interface £40
A3000/5000/400/300 Econet Interface £40
Econet Lead £10

## MY WORLD UTILITY DISCS

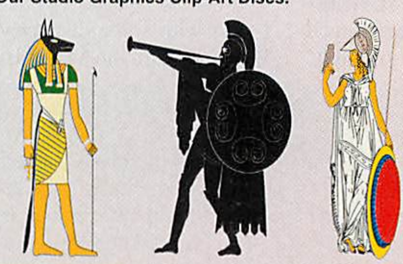
These discs are top quality multi-layer drawings for use with the My World program. Ideal for Schools. MWOO1 & MW003 are a useful tool for help within the National Curriculum (KS 1/2)

Disc MW001 ANCIENT EGYPT £12.95
Disc MW002 CHRISTMAS £9.99
Disc MW003 ANCIENT GREECE £14.95



The Sample Above Is From MW001 (Ancient Egypt)

The Sample Below Is From MW003 (Ancient Greece)




## Studio Graphics

TOP QUALITY CLIP-ART (DRAWFILES) IDEAL FOR SCHOOLS. WE CURRENTLY HAVE 10 SETS AVAILABLE

SG001 Egypt 100+Files Mostly Colour £8.00
SG002 Flags 270+Files (2 Discs) Colour £15.00
SG003 General 100+Files Mostly Colour £8.00
SG004 Xmas (1) 100+Files Colour / B/White £8.00
SG005 General 100+Files Mostly Colour £8.00
SG006 Borders/Cartoons Colour / B/White £8.00
SG007 Borders For Poster B/White £10.00
SG008 Borders For Draw B/White £8.00
SG009 Greek Clip-Art Mostly Colour £10.00
SG010 Xmas (2) 2 Discs Mostly Colour £12.00

The Samples Below Are A Selection From Some Of Our Studio Graphics Clip-Art Discs.



## DTP UTILITIES DISCS

Impression Borders Pack (1) 120 Files (Fabis) £8.50
Impression Borders Pack (2) 120 Files (Fabis) £8.50
Font Pack (1) (2 Discs) £15.00
Font Pack (2) (2 Discs) £15.00

Each Font Pack Contains 20 Families Which Gives An Amazing 200 Different Outline Fonts In Eac Pack.

## Where to find us




From Chester follow old A55 past Holywell until you see Moor Lane on your right, turn down Moor Lane, we are at the bottom on the right hand side (Big White Farm Gate) From Rhyl (As Above) but turn left into MoorLane before Holywell.

## APPLICATIONS

A3010 JoyStick Control £17
Acorn Advance £97
Advantage (Longman) £49
Almanac3 (Stallion) £69
Armadeus (Clares) £59
Art Works (CC) £129
Archivist Pro £38
ArcTerm 7 (Serial Port) £59
AudioWorks (CC) £50
Business Card Designer £8
ColourSep (ICS) £15
Compression (CC) £38
Creator II £48
Desktop C v4 (Acorn) £189
Desktop Thesaurus (RISC) £20
Desktop Tracker (L/Edge) £54
DeskTools (RiscOs 3 Only) £10
Digital Symphony £44
Diary+ (Arm_Tech) £12
Diary+ For Schools £12
Easy Font II (Fabis) £25
Easy Writer (Icon Tech) £159
Equasor (CC) £39
Eureka 2 (Longman) £99
FireWorks (Colton) £129
Font FX (DataStore) £10
Fontasy (ICS) £15
Home Accounts (Minerva) £35
Hearsay 2 (Beebug) £74
Image Animator (Iota) £55
Image Outliner (Iota) £89
Impression (CC) £129
Impression STYLE (CC) £97
Impression Bus Supp (CC) £49
Investigator3 (V-Twist) £48
Labeller (Arm_Tech) £10
MasterFile III (Risc) £49
Morpheus (Oregan) 35
Night Sky (Clares) £69
Ovation (Risc) £109
PC Emulator V 1.8 (Acorn) £99
Pinpoint (Logotron) £89
PipeDream 4 (Colton) £169
Poster (4Mation) £79
Pro Artisan (Clares) £76
ProDriver DJ500/550 Colour £40
Prophet (Apricote) £159
Render Bender v2 (Clares) £105
Results (Colton) £99
Rhapsody v2 (Clares) £49
REVELATION v2 (Logotron) £99
S-Base2 Personal (L/Man) £119
Serenade (Clares) £115
Schema (Clares) £99
ShapeFX (Data Store) £9
ShowPage (CC) £119
Sleuth (Risc) £49
Snippet (4Mation) £36
Studio 24+ (EMR) £149
TypeStudio (Risc) £42
Vector (4Mation) £79
Vox Box (Clares) £49
WordWorks (CC) £40
Wordz (Colton) £99

## GAMES

2067 BD (Oregan) £17
Axis (TBA Software) £22
Alderbarran (Evolution) £27
Bambuzle (Arxe) £17
Battle Chess (Krisalis) £25
Blitz (Arxe) £17
Break 147 & Superpool (4D) £28
Birds Of War (4D) £29
Blitz & Bambuzle £30
Carnage Inc (4D) £20
Chess 3D (Micro Power) £15
Chocks 2 Compendium (4D) £30
Chopper Force (4D) £23
Chuck Rock (Krisalis) £19
Crystal Maze (Sherston) £34
Diggers (Millenium) £25
Dungeons (4D) £29
Elite (Hybrid) £32
Enter the Realm (4D) £20
Fervour (Clares) £19
Fun School 4. -5/ 5-7 / 7+ £21
GODS (Krisalis) £19
Granny's Garden (4Mation) £25
Haunted House (4D) 2meg £25
HeimDall (Krisalis £25
Hero Quest (Krisalis) £24
HoledOut Compendium £22
James Pond £20
James Pond 2 RoboCod £22
Krisalis Collection £25
K.V. (High Risc) £12
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Lemmings EXTRA Levels £17
Lemmings 2 Tribes £25
Magic Pockets (BitMap) £22
Manchester Utd Europe £20
Noddy's Playtime £22
Naughty Stories 6 pack V-1 £49
Naughty Stories 6 Pack V-2 £49
Dinosaurs £22
10 / 10 English £22
10 / 10 Early Learning 3/7 £22
10 / 10 French £22
10 / 10 Maths £22
MIG 29 Fulcrum (Dom) £26
Play It Again Sam 1 / 2 / 3 £21
Premier Manager (Gremlin) £22
Populous (Krisalis) £25
Powermonger (Krisalis) £22
Quark (Oregan) £21
Real McCoy 4 (4D) £27
Sensible Soccer (Renegade) £22
Spheres of Chaos £20
Simon The Sorcerer £34
Sim City (Krisalis) £29
Stunt Racer 2000 (4D) £29
SWIV (Krisalis) £20
TechnoDream £21
Turbo Challange 2 £22
Warlocks (Network 23) £22
Xenon 2 £21
Zool (Gremlin) £21
Zelanites (Micro Power) £17

IF THE TITLE YOU REQUIRE IS NOT LISTED, PLEASE GIVE US A CALL

# In brief

A replacement keyboard for your computer and a utility to speed up printing

## Ergo Keyboard

**Supplier: Castle Technology**
**Tel: (0728) 621222**
**Price: £99 + VAT, Silent version £95 + VAT**

There are a couple of reasons why you might want to consider getting a new keyboard for your computer. The original one might have worn or you've decided you want a better one.

Castle Technology offers two replacement 'Ergo' keyboards which have been adapted from the PC market. Ergo keyboards are available for all Acorn machines as well as the A4 portable, but not yet for the A3010 or A3020.

The new Acorn Risc PCs launched this month have completely standard PC-compatible keyboards. Although Acorn chose the basic IBM PC/AT keyboard for the Archimedes back in 1987, you can't go out and buy a replacement PC keyboard, which is a shame because they are abundant and often very cheap.

The problem is that Acorn uses a non-standard key map, the cable connector is non-standard and the original keyboard includes the reset button and the mouse port.

One solution offered by The Serial Port is to produce a special programmable PC keyboard interface.

Castle Technology has chosen instead to emulate the original Acorn keyboard and in doing so has even managed to improve on the original in at least one respect.

Except for a Castle Technology label, a small black reset button near to where the keyboard cable exits the keyboard's casing and a mouse port nearby, the Ergo keyboard looks exactly like a typical PC keyboard – which is what it started out as. Acorn-like integral keytop LEDs are retained too.

Inside, however, is a small custom circuit board. Differences mean the Shift, Ctrl and Caps Lock key cluster follow the more up-to-date arrangement typical in PCs where, compared with the original Acorn keyboard, the Caps Lock key has been transposed with the Ctrl key and the Shift key has reduced by half in width.

This takes some getting used to as it's very easy to hit the relocated Caps Lock key instead of the Ctrl key you meant to find.

The other main difference is that some key legends are different; Copy is missing from the End key, the £ symbol has moved from the left of the backspace key to the shifted '3' key plus a few other minor changes. There are many more differences in the numeric cluster and the '+' key is now double sized, ousting the '#' key altogether.

Incidentally, the arrow and number keys can be used as a mouse substitute in eight directions. Castle reports that A4 portable users find the irritating problem of 'dropped' windows is cured with the Ergo keyboard.

Overall, I liked the Ergo keyboards I tried very much; they're based on high quality original replacement stock. I personally preferred the tactile feedback version compared to the more quiet, linear, Silent model.

At £99 and £95 respectively, exclusive of VAT, these keyboards aren't as cheap as their PC cousins, but the extra cost is certainly justified if you're not happy with your existing keyboard.

**Ian Burley**

## Spooler

**Supplier: Clares Micro Supplies**
**Tel: (0606) 48511**
**Price: £15 inc VAT, site licence – £30**

*Spooler* is a small application designed to speed up printing. Nestling unobtrusively on the icon bar, it intercepts all desktop printing and saves the output to disc. It then transfers the output to the printer driver in the background, while you get on with writing your next letter.

When printing, there are two times of interest to the user. The first is the time to get control back of the computer (return time), and the second the time for the printer to finish printing (print time). It is usually more important to minimise the return time than the print time, and this is what this program aims to do.

The manual – a small but adequate *!help* file on disc – is refreshingly honest about the limitations of this program. It doesn't work with:

• direct drive laser printers
• text file printing from the desktop (filetype &FFF)
• any printing outside the desktop

to which I would add, from experience, *TurboDrivers* and long files when you only have a small *!Scrap* directory.

In fact, my BJ10 *TurboDriver* from Computer Concepts confidently outperformed *Spooler*, which I'd expect from a product costing three times as much. More surprising was that *Spooler* took only seconds off the return time for the Acorn Risc OS 3 bubble jet printer driver.

The real difference came when I dusted down my ancient 9-pin dot-matrix Juki 5510 printer. Using Acorn's printer drivers, this tortoise took 14 minutes to print a page of graphics; both return and print times.

Using *Spooler*, I had control of my computer again in 81 seconds! While the document was printing, I could request any number of extra copies, tying the printer up for hours but leaving the computer free for me to use. The background printing didn't even slow the desktop down appreciably.

Printer Spooler Status

Spooler on   Suspended

| Time | Size | Status |
|---|---|---|
| 13:59:59, 24 March | 106 Kbytes | Printing 0% |
| 14:00:18, 24 March | 181 Kbytes | |
| 14:00:51, 24 March | 75 Kbytes | |
| 14:01:08, 24 March | 18 Kbytes | |
| 14:01:17, 24 March | 36 Kbytes | |

Spooler makes print queue management easy.

Many users will find nothing new in this. Using standard Risc OS printer drivers you can print to file, and then print the file in the background at your leisure, a method which I found gave a slightly faster return time than using *Spooler*. However, this is fiddly and tedious to do repeatedly.

*Spooler* automates the whole procedure. If you are using a relatively slow printer, try spooling to file and background printing using your current printer driver.

If you find that this significantly cuts down the time you spend twiddling your thumbs waiting for a printout, it could be worth your paying £15, and letting *Spooler* do it automatically.

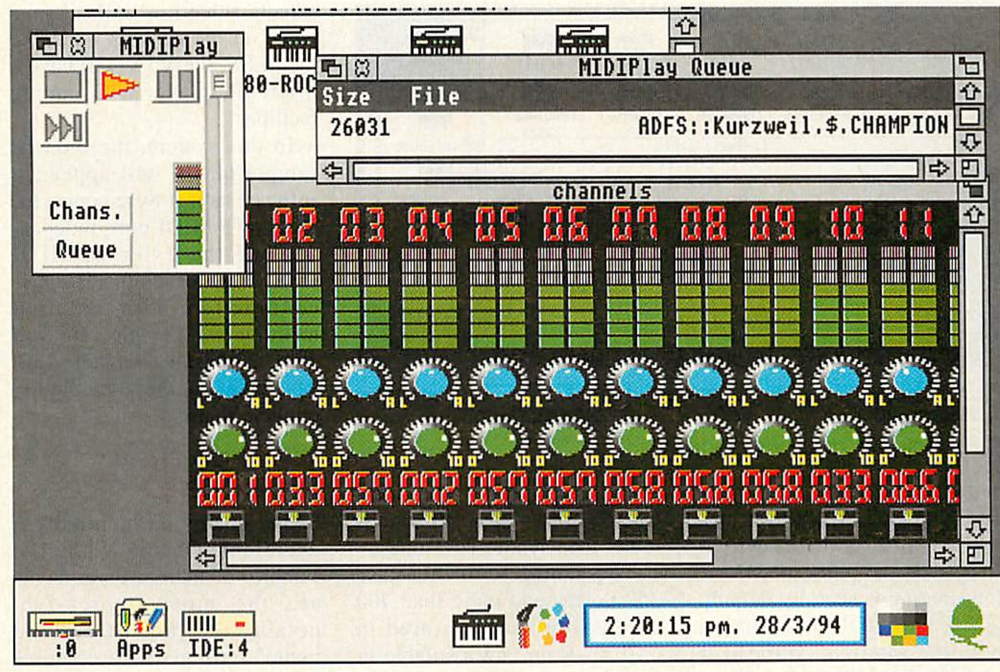
**David Matthewman**

The sound facilities on Acorn computers have fallen sadly behind the competition in recent years.

Macintoshes now come with extensive built-in sound and MIDI features and, though a bog-standard PC still has a hard time going 'beep', a relatively inexpensive 'Sound-Blaster' card will upgrade it to sampling, MIDI and CD sound from any software that conforms to Windows/ MPC standards.

For too long now, Acorn computers have been slipping behind in an area of growing interest, not only to weirdo musicians, but to a larger community of users for whom 'Multimedia' means more than just sticking a CD-Rom in the slot and watching the pretty pictures.

So much for the bad news.

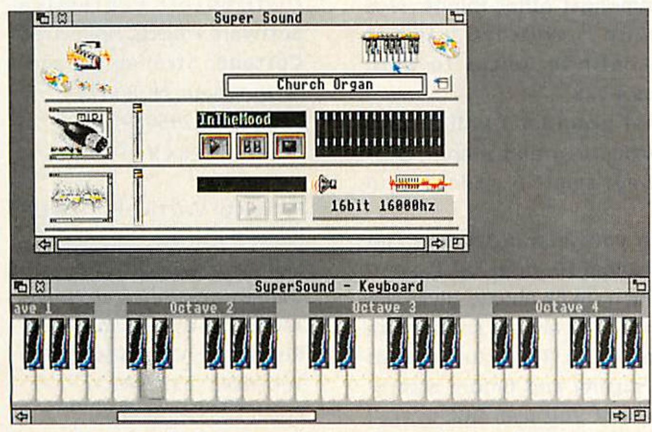



Playing sample sounds with Kurzweil's MidiPlay System

# Sounds impressive

Richard Garrett looks at two new boards which vastly improve the sound output of your Archimedes

The good news is that some manufacturers are trying to change this state of affairs by producing 'sound cards' for Acorn machines. The first two products to appear, reviewed here, are Expressive Software Projects' SESS 1600 and the Vertical Twist Kurzweil VTX 2000. Both cards work with A300, A400, A500 and A5000 series machines and, fitted externally, with A3000s. The ESP system is available now and the VTX is due for release in early summer.




Heavenly music with *SuperSound's* nine – Octave keyboard

## ESP SESS 1600

ESP's 'Super Sound Expansion System' is composed of a synthesizer podule, an external input/output unit and a MIDI file/sample-playing program called *SuperSound.*

The podule contains a custom chip set, built by American synthesizer manufacturers Ensoniq, whose principal elements are: a 16-bit sample playback unit, a synthesizer with 4Mb of sounds in Rom, and a 68000 micro-processor to drive the sound generation, independent of the Arm.

The Roms contain wave-table information for a General MIDI soundset of 128 voices and 47 percussion sounds, and the synthesizer can play up to 32 sounds using 16 voices simultaneously.

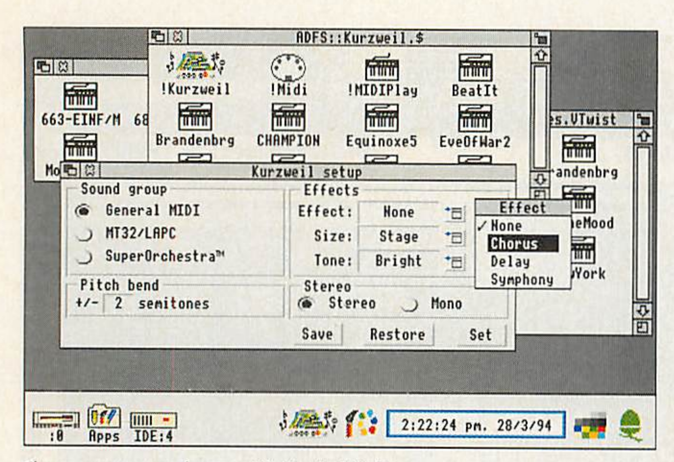
The sample player hardware can handle 8, 12 and 16-bit linear and mlaw formats, at playback rates of anywhere from 1Hz to 60kHz and can also play the soundtrack from *Replay* files.

The external I/O unit is a white plastic box (18x13x 5 cm) joined to the podule by a one metre cable. On its back are three MIDI sockets (IN, OUT and THRU) which can connect the Arc to external keyboards, to other MIDI sound sources or even to another computer; a pair of phono sockets for 'line level' stereo audio output to domestic hi-fi; and a miniature stereo jack socket suitable for walk-man-style headphones or powered speakers.

The front of the unit features a stereo headphone socket and a volume knob which controls both headphone outputs.

*SuperSound* comprises a sample player, a MIDI file player, and a 'keyboard utility'. Both players work in the same way.

You drop a MIDI file (type 0 or 1) or a sample onto the *SuperSound* icon or its window, it loads and then it plays. The Sample player has 'video recorder' style controls to start and stop playback and an 'options' window which gives details of the sample format




Choose your own chorus with Vertical Twist

and lets you change playback rate. The MIDI file player also uses 'video' controls which start, stop and pause playback. Information is sent, by default, to all 16 MIDI channels on both the internal synthesizer and the external MIDI socket.

You can change playback levels or mute any of the 16 internal channels during playback using a software 'mixer'.

The keyboard utility displays a piano keyboard, on which you can audition any one of the 128 voices by selecting keys with the mouse.

## VTX 2000

The Vertical Twist podule is built around another American chip set, this time made by Kurzweil Music Systems. Like the SESS 1600, it is a 32-note polyphonic, 16-channel instrument driven by a 68000 processor but, as its name suggests, this 'Multimedia Audio Sample-playback System' (MASS) plays sampled sounds rather than synthesized tones.

The samples, in this case 357 voices and more than 400 percussion sounds stored in 6Mb of Rom, are available in three 'sound sets'.

These are a General MIDI set, a set that emulates the Roland MT32/LAPC system and Kurzweil's own 'Super Orchestra' set. The instrument can be tuned to within half a cent and comes with a built-in effects processor, which allows you to add small amounts of reverb, delay, and chorus to the audio output. Unlike the 1600, it has no facility for playing Risc OS sample files.

The system will probably consist of a single podule with phono connectors for audio, a miniature jack for headphones and a small adaptor for external MIDI connection.

Volume control, tuning and effects selection will all take place on the desktop and, like the SESS, the VTX will have a MIDI file player with muting facilities.

In this system, the internal sample player will appear to software as if it were connected to its own MIDI port, independent of the external MIDI OUT. This means that, used in conjunction with external instruments, a single card will drive 32 MIDI channels. ESP have plans for the same facility on their board.

## What do they sound like?

Sound quality on both units is excellent. On the VTX, the samples of natural instruments are the most impressive, notably the 'acoustic grand piano' setting which contains several samples, so that when you hit a key harder the note becomes more metallic and percussive, just like the real instrument.

Similarly, the 'brass section' and 'crash cymbal' sounds, which are notoriously hard to synthesize, come across very well. The ESP/Ensoniq card on the other hand, though no slouch at imitating real instruments, excels in the area of synthesized sounds.

## Compatability

Both boards 'emulate' MIDI using Acorn-licensed code, so that they appear to applications as if they were external instruments connected by an Acorn MIDI interface.

This means they should work with any application that conforms to Acorn MIDI specs. At this early stage, however, there are a few compatibility problems with some programs, so it may be worth checking with the manufacturers that your favourite application works with their product before you make a purchase.

## Which card?

Both cards use chip sets from up-market American manufacturers, with strong presences in the music industry and designs on the PC world.

Therefore it's not surprising that they have many features in common.

If I had to make a choice based on sound generation alone, I would go for the Vertical Twist unit. The Kurzweil samples are wonderful and this fact is reflected in the price.

On the other hand, the current unit is a specifically music-oriented device, without the links into Replay and Risc OS sample playback offered by ESP.

For this reason, the SESS 1600 is likely to appeal to users looking for multimedia functionality as well as an affordable musical instrument.

In any case, the proof of this pudding is in the listening so, if you want to improve your Archie's singing voice, try and get to a show or a demo and check out both these products. They are well worth a listen!

## General MIDI

When the original MIDI specification was defined in 1982, it was little more than a system for sending keypress information from one electronic music keyboard to another.

Although it included a 'program change' facility to select voices ('programs') on remote instruments, no standard was set defining what each 'program number' should sound like.

This meant that program number 64 on one synthesizer might sound like a clarinet, like a string orchestra on another, and like a xylophone on a third.

With the development of Standard MIDI files, however, a growing number of people felt a need to move data around, confident that if they sent a tune on disc to another user who had a different computer with different software and music hardware, the recipient would hear something similar to 'the composer's original intention'.

To this end, the MIDI spec was extended in 1991 to include a 'General MIDI' (GM) protocol which, amongst other things, says that when a device is switched into GM mode it assigns definite voices to MIDI program numbers 1-128.

This means that program 1 will always sound like an 'acoustic grand piano', program 43 will always select a 'cello' sound and so on.

Similarly, when you send notes to a GM device on MIDI channel 10, reserved for percussion sounds, the note E3 always gives the sound of low conga, C#2 always sounds like a crash cymbal and so on. The actual sounds you hear vary in quality and timbre according to the instrument you use, but overall impressions are pretty consistent.

## Product details:

**Product: ESP Super Sound Expansion System 1600**
**Manufacturer: ESP Hardware**
**Tel: (0706) 868803**
**Distributor: Expressive Software Projects, Holly Tree Cottage, Strelley Village, Nottingham, NG8 6PD**
**Tel: (0602) 295019**
**Price: £299 ex VAT**

**Product: Vertical Twist Kurzweil KTX 2000 Multimedia Sample-playback System**
**Distributor:Vertical Twist, Albany House, Olving Road, Chichester, West Sussex**
**Tel: (0243) 531194**
**Price: £399 ex VAT**

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# Back in the

Photo CD has finally arrived for Acorn users. To get your own pictures onto Photo CD take your undeveloped film, negatives or slides into your local photographic shop and about a week later collect them on a beautiful gold coloured CD, with a catalogue of tiny colour images to remind you what is on the disc.

It is never a good idea to get a whole film done in one go, although it is cheaper to do so, as there are bound to be a lot of pictures that are no use. No one, not even David Bailey, gets 36 good pictures out of a roll of film!

It is far better to have your film developed and printed in the normal way and then choose the images that are going to be of any use to you. You can then get these transferred to your Photo CD in several sessions until you have filled the disc with 100 pictures.

I have done this twice without any problem. For my first disc I spent several evenings sorting through years of old films picking out a mixture of black & white negatives, colour negatives and slides.

When you get your films developed and printed normally, you don't realise how much detail is missing. That green stuff that your brain tells you is grass is really no more than a blur. This doesn't mean you should get your film processed somewhere else. It just shows the limitations of modern printing equipment.

It is only when you get your negatives put onto Photo CD that you become aware of this. It's like getting glasses for the first time. Suddenly you can see every blade of grass. The quality really is amazing.

The trouble is that seeing all this previously hidden detail shows up the weaknesses of the camera that you thought was so wonderful. So, as well as buying all the CD-Rom drives, interfaces and software, you'll also have to trade in your trusty old Zenith for a Nikon!



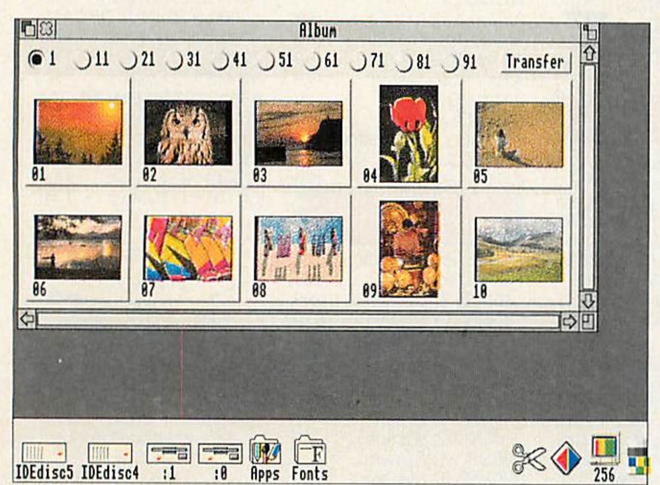
Change FSI's dithering (left) knocks spots off Kodak's

## Photo CDs input

There are four ways to get the pictures off Photo CDs into your computer.

The first and simplest way is to use Acorn's *PhotoView*. This is not meant to be an art program. It is merely a front end which allows you to take the images from a Photo CD and save them in a variety of sizes and formats, including full 24-bit sprites.

On running the application you are shown a screen of thumbnail images in your current screenmode. Clicking on one of these brings up a window showing the various viewing options from which you can view and save your picture.




ProArtisan 2's image window

The second way is to use Clares' *ProArtisan2CD*. This is basically *ProArtisan2* extended to handle Photo CD and will be released on 2 CD-Roms, the first with the program itself, demos of Clares' other software and a selection of sprites, the second with Photo CD images.

Unlike *PhotoView*, which fills up the window with as many thumbnails as it can, *ProArtisan2CD* shows them in groups of ten. As well as being able to take a full-size image into the program, you can also drop the ten thumbnails into *ProArtisan2CD's* sprite pool.

I am a great enthusiast of *ProArtisan2*. Given the limitations of the current range of Acorn machines, it offers the widest range of facilities you could ask for and if you are getting into Photo CD it is an essential.

The third way to access Photo CD is to use *ChangeFSI* version 0.93 which can read and process the images. It is interesting to note, that with all its size and resources, Kodak has not managed to produce dithering routines that are anywhere near as good as those used in *ChangeFSI*.

Comparing a 256 colour sprite produced by *PhotoView*, which uses Kodak's dithering routines, with one from *ChangeFSI* shows how much better the latter is. Of course, with 24-bit sprites this is irrelevant as there is no dithering involved.

The final way to access Photo CD is only relevant to users of *Impression Style* or *Publisher* and *Artworks 1.5*. Computer Concepts has produced a disc called Graphics Loaders which contains programs to import Clear, JPEG, TIFF and Photo CD into their progams.

You simply catalogue the Photo CD, drag the image onto your document and choose the bits-per-pixel and image size you want. A few seconds later the converted picture appears.

## Platform independence

Photo CDs are almost the only

area of CD-Rom development where we Acorn users are not penalised. A Photo CD is platform independent. With the right software the discs can be accessed equally well from a PC, a Mac or an Acorn.

There are some very exciting developments in CD-Roms. Every major book publisher is working flat out to become involved in this new market. Sadly though, with only a few exceptions, none of them are looking at the Acorn format.

The cost of putting software onto CDs is little more than putting it onto discs but, like music CDs, we are getting ripped off again. Another way to get Photo CDs is to buy discs of library pictures produced by specialist companies.

Andromeda, a company new to Acorn users, has just




# picture

## Colin Thompson explains how to pull high quality images into your computer.

released it's first 3 PhotoCDs. They are 100 Classic Cars, 100 Beau-tiful Landscapes and 100 Flowering Plants. Two others, Space Shots and Beautiful Backgrounds, should be out by the time you read this.

### Presentations

The quality of these CDs is superb. Even in 256 colours they produce incredible quality images and as they are copyright free you can use them in your own work to create very impressive presentations.

So, after you've bought all the equipment and had your best photos put onto CD, what can you do with them? For a couple of weeks you can show off to your friends and rave about the amazing detail and then you sit down and wonder what you actually bought it all for.

I write and illustrate children's books. To help me with my pictures I use reference material from a whole variety of sources including newspaper clippings, encyclopedias and other reference books. I also use photos I have taken specifically for the purpose.

Since the invention of the camera, artists have used photographs as reference material. The traditional way of doing this was to draw a grid on the photo and then copy the picture by hand to a larger grid on the canvas.

This was very time consuming and often not too accurate. Many of Degas' famous paintings of ballerinas were based on straight copies of photographs.

With Photo CD there is a much easier and more accurate way to get what you want onto the canvas. Using *Artworks*, I created a blank page the same size as my drawing, dropped my photo into it and scaled it to the right size. By printing this out on sheets of tracing paper I got a perfect full – size guide from which I traced what I needed onto my artwork.

Enlarging sprites up to this size usually gives a very poor image, but using a sprite from a Photo CD rather than a small hand-scanner gave a much better picture with far more detail, and the original photo and a magnifying glass gave me any colour or detail I wanted to pick up.

I realise that what I am doing with Photo CD is quite specialised and I am sure its main use will be in publishing. The high quality of Photo CD is really the final link in the chain.

It will allow users to cut out all the expense of colour scanning and typesetting and produce everything themselves that a printer needs for full, four colour litho printing.

With the right equipment a printer can produce printing plates straight from disc. Not only will this save money but it will also make the production of short print runs a lot more feasible in full colour.

There is no doubt in my mind that Photo CD is going to become very important in the world of publishing and printing.

**Colin Thompson**

**Product details**

**ProArtisan 2, £135**
**ProArtisan 2 CD, £160**
**Supplier: Clares**
**Tel: (0606) 48511**
**Upgrade from ProArtisan 2 to ProArtisan 2 CD, £29.95**

**Acorn *PhotoView* and the CDFS upgrade will be provided free with all new SCSI filing systems. For existing users Acorn supply an upgrade kit at approximately £35 + VAT.**

- **Kodak Blank Photo CD, £4.75**
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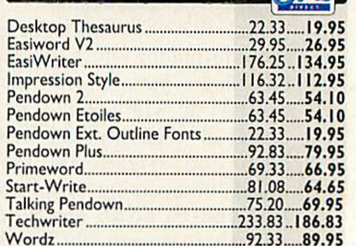
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# In the driving seat

Ian Burley looks at the best CD-Rom drives available for your Acorn

Predictions suggest that CD-Rom drives will soon be as common in personal computing as floppy discs already are today. The trend is definitely towards CD-Rom-based software distribution and the surge of interest in multimedia applications is accelerating the process.

Here we examine six very different models ranging from £289 to £999, but before looking at each drive in turn, there are a number of general points to be considered before choosing.

## SCSI interface

A SCSI-compatible CD-Rom won't need an extra interface card if you already have one for a SCSI device. Full specification SCSI interfaces will generally be able to handle data streams at much higher rates than a CD-Rom drive can generate, though the new triple and quad-speed drives might be held up by older designs.

SCSI lets several CD-Rom drives, up to seven in all, be daisy-chained off the one interface card. A selection of SCSI drive models is supported with the necessary device drivers for CDFS, but as we found with the unsupported NEC triple-speed drive it's not simply a case of plugging in and switching on any old drive.

CD-Rom drives are more complicated than their hard disc counterparts. This is slightly frustrating as there are some real SCSI bargains to be had, including the Sony-based Apple CD300 from under £200; we have yet to find out if this particular drive will work with the existing drivers or not.

Generally speaking, SCSI CD-Rom drives cost more than proprietary interface ones but they also often, but not always, offer superior performance.

It's worth checking to see if you have the latest release of CDFS, which was 2.21 at the time of writing, especially if you want to look at Photo CD or other multi-session discs.

## Proprietary

CD-Rom drives which are based on IDE technology are beginning to appear, but even so it's likely that unless you're contemplating a SCSI drive you will need a specific interface card.

Proprietary interfaces mean you are limited to the drive model supplied by one manufacturer. If you need to change the drive in future you will also have to change the interface card as well. On the other hand, proprietary drives are usually a fair bit cheaper than SCSI ones.

## Caddies

Some CD-Rom drives require a CD-Rom disc to be inserted into a special cartridge, called a caddy, before being loaded into a drive. Caddies add to the cost and in operation are less convenient than caddy-less drives.

However, if you are using a new Risc PC with an internal CD-Rom drive, caddy-less drives have problems in tower configuration. Most new drive models do tend to be of the caddy-less variety.

## Multi-session

Avoid any drives which are not multi-session or Photo CD capable. Kodak Photo CD discs need multi-session drives because the disc-contents index gets shifted to a new location on the disc after it has been updated with additional photos.

Usually, an ordinary CD-Rom drive can read a new Photo CD-Rom disc which just contains one library of pictures. After the disc has been updated with extra images, the new index, and hence the latest pictures, won't be visible to the CD-Rom drive.

Practically all new CD-Rom drives are multi-session, but it's always worth checking as some – especially SCSI drives like the Toshiba tested here – need extra drivers for Photo CD.

## Speed

There are two speed considerations with CD-Rom drives: data transfer speed and track seek times. CD-Roms originally operated at the same rotational speed as audio CD players. This equates to a data transfer rate of about 150K bytes per second, which is just about adequate for standard 12.5fps Replay movies.

Compared to a hard-disc drive, which can operate in the region of 1 megabyte per second, 150K is very slow, especially for very long data files.

Double-speed drives offering about 300K per second rates are now very common and essential for glitch-free 25fps Replay movies. Indeed, single-speed drives are really obsolete now.

Triple-speed (450K/second) and quad-speed (600K per second) drives are now available and they're correspondingly more expensive, but the benefits are obvious.

| Drive | Measured transfer rate K/sec | Average access time (ms) | Multi-session | Interface | Loader | Price ex.VAT | Supplier | Tel |
|---|---|---|---|---|---|---|---|---|
| Pioneer DRM604X | 590 | 300 | Yes | SCSI | 6-disc magazine | £999 | Computer Concepts | (0442) 63933 |
| Pioneer DRM602X | 290 | 300 | Yes | SCSI | 6-disc magazine | £499 | Computer Concepts | (0442) 63933 |
| Ultimate CD-Rom | 290 | 250 | Yes | Proprietary | Motorised tray | £289 | HCCS Associates | 091-487 0760 |
| Cumana SLCD300 | 300 | 320 | Yes | Proprietary | Motorised tray | £339.57 | Cumana | (0483) 503121 |
| Morley Revolution SonyBus | 290 | 300 | Yes | Proprietary | Spring release tray | £299 | Morley Electronics | 091-257 6355 |
| Morley Toshiba XM3401 | 330 | 200 | Yes ** | SCSI | Caddy | £399 | Morley Electronics | 091-257 6355 |
| NEC MultiSpin 3Xp | 450* | 250 | *** | SCSI | Top loader | £349 | NEC (UK) Ltd | 081-993 8111 |

*not tested ** but no Acorn driver yet ***Drive not yet supported by CDFS



Left stack: Ultimate CD-Rom (top), Pioneer DRM602X (bottom)
Middle stack: NEC Multispin (top), Cumana SLCD300 (bottom)
Right stack: Morley Toshiba XM301 (top), Morley Revolution SonyBus (middle), Pioneer DRM604X (bottom)

Throughput is all very well, but if your drive takes an age to find the data in the first place, performance can be severely compromised especially when your application needs to find lots of smaller files.

Average track seek times of about 300ms, around 20 times slower than a hard drive, are usual for many CD-Rom drives. One exception is the Toshiba XM3401 family of drives which can find tracks in just two thirds of the time, because Toshiba has invested in low-mass head-mechanism technology.

In use we'd expect our Toshiba XM3401-based Morley to feel about the same in typical performance as an NEC triple-speed drive, even though the Toshiba is just a double-speed unit.

Finally, most CD-Rom drives let you play audio CDs and a Risc OS application is available to control CD-Roms from a desktop window with what look like CD-player control buttons.

Headphone jack sockets and volume controls are usually featured on the drive itself and some have hi-fi phono sockets as well.

## Pioneer DRM604X and DRM602X

You can get multi-disc auto-changers for hi-fi systems, so why not for a CD-Rom drive? Well, you can with the Pioneer 600-series.

The DRM604X is a SCSI-based quad-speed six-disc CD-Rom auto-changer and the 602 is a much more affordable double-speed alternative.

These drives are exclusively supplied and supported for the Acorn market by Computer Concepts, who can supply Morley SCSI cards with the necessary drivers in Rom.

Users of other SCSI cards require release 2.20 of CDFS or later and a device driver on disc. It's worth checking for compatibility issues before buying.

The six-pack CD magazine is compatible with Pioneer hi-fi CD units and works very well – discs are swapped in about five seconds. Six logical drive icons appear on the desktop icon bar as a result and a useful security measure throughtout this process is that the eject button can be immobilised.

The 604 had a blisteringly fast transfer rate of 590K per second in our test while the 602 was a more sedate 290K per second, typical of most double-speed drives.

The 602 is a much more affordable drive than the 604 but both are highly recommended, especially for network use.

## Cumana SLCD300

We've seen this popular drive before. The Cumana SLCD300 is based on a respected proprietary double-speed Panasonic mechanism, has a motorised caddy-less tray loader and fixed mains and interface cables emerge form the rear of the case.

A criticism of the similar drive we reviewed last year has been answered: the interface cable is now long enough for the drive to sit comfortably on either side of the computer, regardless of which side the interface card is installed.

The latest Acorn CDFS release with Photo CD support is supplied with the SLCD300. The Cumana has an average 300K/second data rate in the double-speed league and is a safe buy in an attractive package.

## HCCS Ultimate CD-Rom

A Mitsumi FX-series double-speed CD-Rom mechanism in a sturdy compact metal case lies at the heart of the HCCS Ultimate CD system. The caddy-less disc tray is motorised and the data cable is fixed to the drive internally. Power is taken from the interface card via the data cable. Data transfer performance was measured at an average of 290K per second.

The proprietary interface is available as an HCCS Ultimate Expansion micropodule, or conventional 16-bit or 8-bit podules, so all Archimedes models are covered. At £289 + VAT, HCCS beats Morley Electronics by just a tenner in the cost stakes.

## NEC MultiSpin 3Xp

NEC has come up with a space-age top-loading caddy-less portable SCSI drive which operates at up to triple speed rates.

Unfortunately, we weren't able to get this drive running as it is currently unsupported by any Acorn CDFS device drivers. That said, I'm hoping it won't be long before the drivers appear, as the 3Xp is undoubtedly a very attractive drive.

It's a SCSI-2 device with mini-connectors which will need an adapter for use with typical Acorn SCSI-1 interface cards. The top-loading lid has a dampened release and there is a small LCD status display.

An optional rechargeable battery pack can be clipped to the rear of the unit; the separate mains power supply is rather large and bulky.

Where the 3XP has been tested on PCs and Macs it has lived up to its 400K plus-per-second triple-speed specification, though track seek times are only slightly better than average at 250ms. NEC has also announced quad-speed additions to its CD-Rom range.

## Morley Revolution SonyBus

The original Morley Revolution we reviewed last year had one major disadvantage; it was a single-speed mechanism. Morley has now thankfully switched to a double-speed version of the Sony proprietary interface drive without changing the price.

Measured performance at 290K per second is now on a par with the similarly-specified Cumana and HCCS drives looked at here.

As before, the Revolution is a sturdily cased unit with a removable mains and interface cable. The caddy-less tray loader remains spring loaded rather than motorised, so the computer can eject a disc but not re-load one automatically. Gold-plated audio connectors at the back of the case add to the overall impression of quality.

Morley also does a PC interface for this drive for those who have to use both a PC and an Archimedes. Supplied documentation is well presented. Overall, the Morley is a good, solid choice and very affordable.

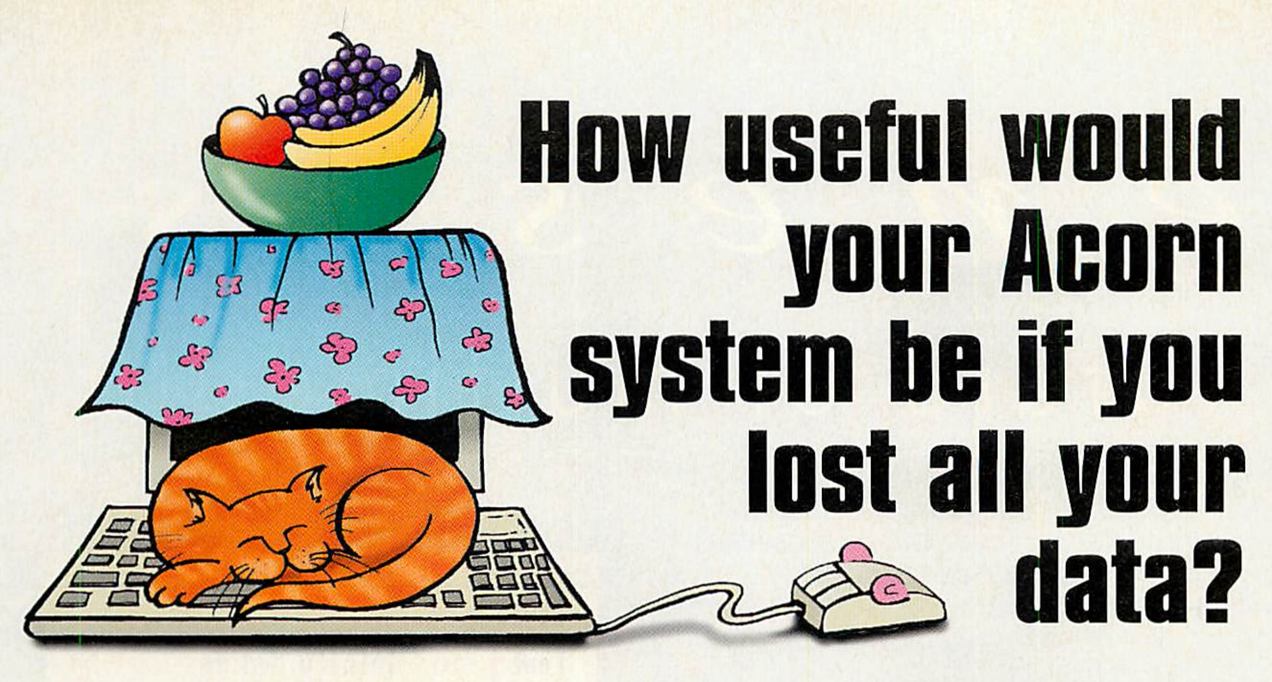
## Morley Revolution SCSI Toshiba XM3401

The Toshiba XM3401 drive used by Morley in this SCSI package is popularly regarded as the best double-speed drive on the market.

It returned an above average 330K per second transfer rate performance and has the best in-class track to track seek performance of any drive on the market to date.

One problem with the XM3401 is that there aren't any Acorn CDFS drivers for it yet which support multi-session discs, so that rules out Photo CD, but Morley is working to fix this disadvantage soon.

One other point is to note that this drive uses caddies. This Toshiba is still the best double-speed choice but for its lack of CDFS multi-session support at present, which will be rectified in the near future.



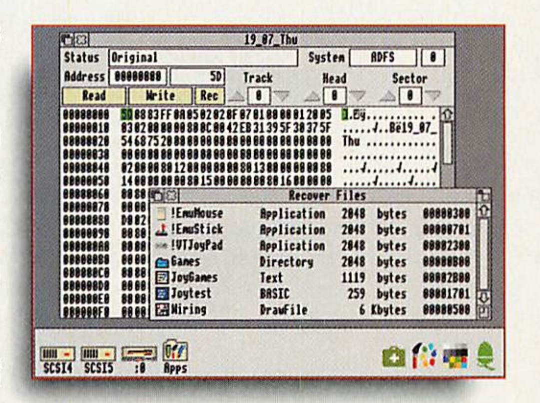
# How useful would your Acorn system be if you lost all your data?

These days a hard disc is considered mandatory for the majority of computer users. The convenience and speed of having all your programmes and data stored together is unquestioned.

But have you ever stopped to consider the dire consequences of losing some or all of the files on your hard disc? Perhaps you or another user accidentally deletes some data, or a small but vital file has become fatally corrupted. Hopefully not a common scenario but, nonetheless, a nightmare you can well do without.

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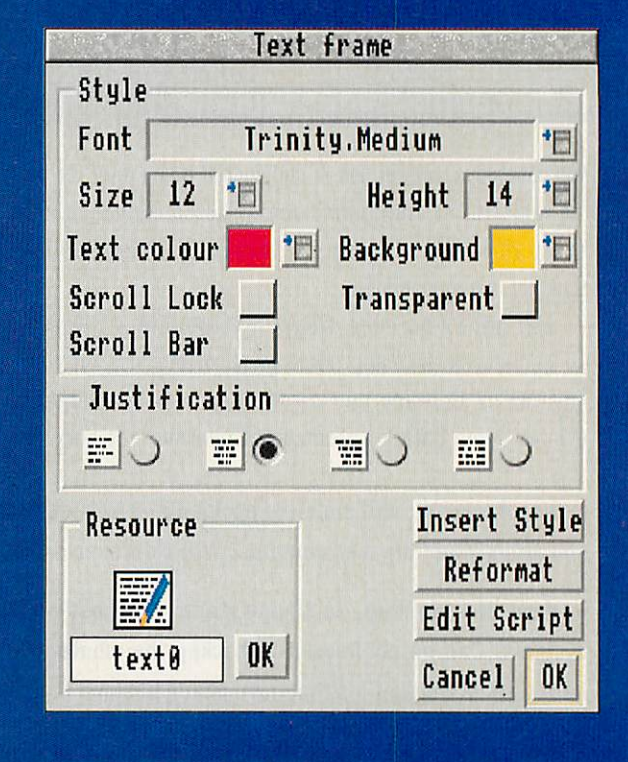
# genesis™

## the future of multimedia

Genesis, which for many years has been the leading multimedia authoring package on the Archimedes, has taken a large step forwards with the announcement of two new versions: Genesis Project and Genesis Professional. Both new versions include a completely revised user interface designed to be both easy to master for the novice user, yet quick and powerful for the Genesis expert.

The Genesis menu structure has been simplified by using dialogue boxes to alter the style of frames and pages. Application creation and editing has been eased by the introduction of 'Object Linking and Embedding'. 'OLE' allows data to be transferred quickly and smoothly between Genesis and editors such as Draw, Euclid and Artworks.

Genesis now supports Artworks, Replay, Windows .BMP and .WAV files. Control buttons can be added automatically to Euclid, Film, Replay and Sound frames. It now incorporates a 24 bit colour model and can handle the new 15 and 24 bit Sprites. A turbo loading system significantly increases the speed at which pages open.




## genesis Project

Genesis Project is the replacement for Genesis Plus. It is aimed at the user who wishes to create multimedia applications in a simple straightforward manner by clicking and dragging with the mouse. New features include 3D frame borders and automatic frame snap. Users of Genesis and Genesis Plus will appreciate the ease with which applications can now be created and the extra facilities that the new user interface brings.






## genesis Professional

Genesis Professional is the replacement for Genesis II. It is ideal for the Genesis power user who requires the very best in multimedia authoring tools. Many features, previously only available via the script language, can be accessed using the mouse. Master pages can now be created and added to a library. Support is provided for Laservision players and for CD (including control for CD audio). The powerful Genesis Script language has been extended with a host of new keywords and now supports global variables which can be accessed by all pages. Scripting can now be done externally in Edit using the OLE facility.

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|---|---|
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# GAME SHOW

## UNDER NEW MANAGEMENT!




I know what your thinking: a shot of *Elite 2* in the Game show, does that mean it's going to be converted? Well, one major Acorn games company is tendering for the rights to the game, so let's hope so...

Many of you will read the following pages and perhaps notice a slight change in writing style. The reason is quite simple: you have a new games editor.

Each month I shall be steering you through the jungle of floppies, Ram requirements and compatabilities relevant to the games reviewed.

My experience lies largely in the console market from which I came. After being editor of a Sega title the time has come to shun the 'fast-food' type market that consoles have adopted and concentrate on perhaps a more stable environment.

I hope you won't be too offended if I make a few comparisons to the two markets, in some ways they are similar, in others radically different. I shall also venture further by saying that perhaps the Acorn market is a tad behind in some leading software titles. This should not be viewed in any negative respect, and in fact this month you are getting the cream of the crop.

In my days with the Sega title I had to review some dreadful games that were created just to fill a quota. *Sensible Soccer, Diggers* and *Speedball II* have all been around a while and seen considerable mileage on all formats for noble reasons.

But would you be pleased if the Acorn market was flooded with duff titles? I don't think so. If anything I have uncovered a deep rooted pride in the owners of Acorn machines and this seems to reflect in the developers, who hesitate that they might offend even before conversion or development.

After some consultation with the software houses I can reveal that the titles destined for release will, on the whole, be extremely good, taking the best from all formats.

Since there are not too many successful 32-bit machines on the market, games will be taking a distinct 16-bit feel for a while with both Amiga and Sega perhaps showing the way.

The PC developments will increase dramatically over the next year and chips will perhaps be stretched a tad further. However, it is my opinion that the PC market is no picnic at the moment and the hit ratio is a lot lower than the other stable markets. Perhaps I've been spoilt this month, but I didn't have to look too hard for great games which is a sign of the good market quality at this time. I now look forward to a happy relationship with both my keypad, the joystick and my Acorn in the months to come.

If you would like to write to me with any specific gaming problems or maybe some themed review sections, say simulations or adventure games, I'd be happy to oblige by answering in this column.

Also, if you are aware of anything you think may be of considerable use to other users and just have to tell someone, then I'll be only to happy to listen. You never know how important information can be.

Steve Atherton




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# DIGGERS

*Diggers* is now a very familiar title amongst 16-bit users and has recently seen a cross-over to the 32-bit market for the Amiga CD-32.

The Archimedes version is as polished as its predecessors, oozing with atmosphere and plenty of 'let's play now please!' about it. Games like this are not ground breakers in anything else other than their originality so those of you expecting astounding graphics and Pro-Logic-type sound effects have missed the entire point of this sort of game.

The programmers were definitely aiming this little number at the addiction market to nestle comfortably alongside the likes of *Lemmings* and *Lost Vikings* to name but a few.

With a name like *Diggers* I guess I would be insulting just a few of you. If I told you the objective of the game. You appear to be marooned on a planet called Zarg. Now, the average gamester feels an irresistible urge to grab a laser, search for power-ups and rid the surface, or any habitable area, of all life-forms. This is bad.

For life to co-exist in this huge galaxy of ours some relationships will have to be bonded. I mean it's not all Alien and 'V' you know. So what do you do?

Well first things first, it might be an idea to figure out just how life survives on, (or in this case below), the planet. A quick recon reveals tribes of beings mining for all they are worth for certain valuable items. These items provide wealth and obtaining this capitalist dream in an allotted time period allows the tribe to escape. (To the next level....)

First stop for any alien being is the Zargan Mineral trading centre which will allow you to choose a tribe to command. This tribe will then eat, sleep and most importantly dig for you until they drop. A similar set-up to the office here, only the Zargan tribe are allowed to sleep and earn enough to eat!

After being assigned a zone or region to make the profits, some decisions need to be made, how to commit the workforce being the primary one.

Options lie in obtaining equipment for a more speedy recovery of valuable items or just going for broke with what labour you have.

The game would certainly have reached a level of interest destined to slope away into boredom if the programmers had left the objectives at that.

However, things slope decidedly up up and away with the inclusion of other planet inhabitants, in this case tribes who also mine in your region. Since wealth is a primary objective they are none-too-friendly about your presence and will stop at nothing to rid you of members of your work-force.

This is something you want to avoid as replacing labour is costly and the only way to buy it is to mine. You see the problem.

That's not all though, scattered around the work area are nasties such as killer mushrooms, skeletons and other strange-looking creatures. You must avoid these too if you want to survive the work time and progress to the next level.

To aid you in this task there are explosives, mechanical diggers, lifts and other site equipment and as I said these cost so take care with your purchases. A good way of learning the ropes is to watch what other tribes do in situations and attempt to copy them in a feeble attempt to survive.

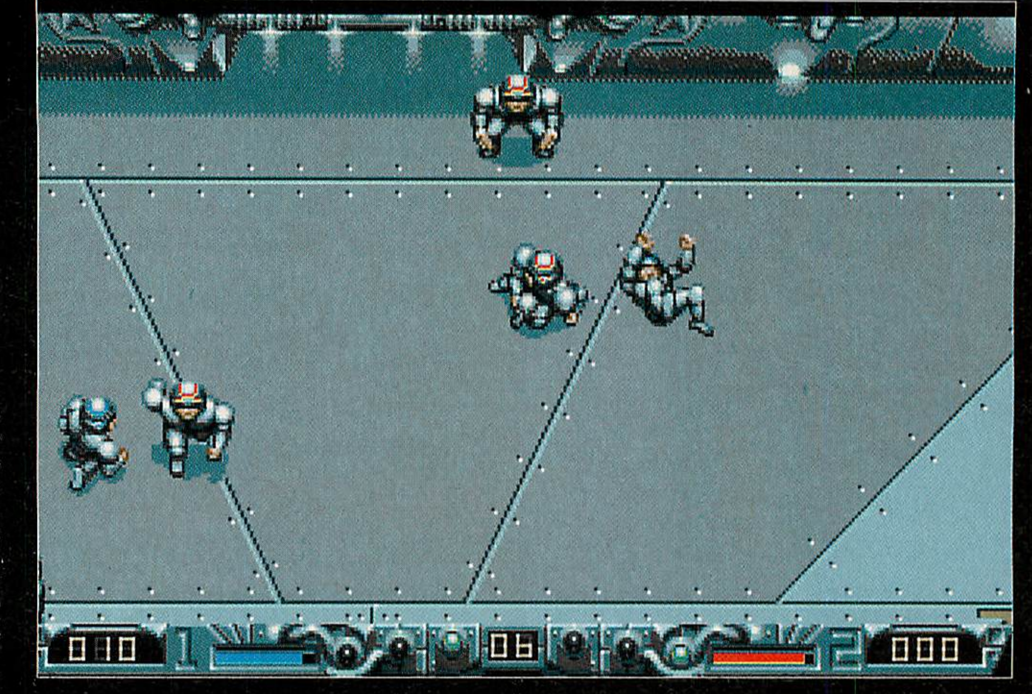
This game is as original as it is bizarre - and addictive too. The save feature allows for the conquering of level upon level with the individual character attributes creating cause for amusement.

This month your wallet will be considerably lighter as the games hitting the market – including this one – are essential purchases

Steve Atherton



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# SPEEDBALL 2

*Speedball II* is a game of the future. It's definitely not the sort of game that parents would enjoy watching on a cold Sunday morning clutching the odd cup of 'special' coffee, but more a game the government could solve the over-crowded prison situation with.

*Speedball II* relies on speed and precision, but most of all a complete barrier to pain and agony. This game is rough.

Based loosely on both American football and handball, the game consists of two teams who must toss a metallic ball around an enclosed arena, probably the size of a five-a-side football pitch and by various means deposit the ball in a goal situated at either end.

Sounds easy and it is, with the myth of 'simple games being the best' certainly ringing true here. This is one of those games that you can pick up in a matter of minutes but will spend hours and hours mastering, even more so if you have a special opponent in mind, be it human or computer driven.

Before the mastering can begin the basics must be obtained. As I said earlier, this is a simple process with the controls well thought out and a quick response is always close to hand.

Breaking it down, the computer activates the nearest man with your control options split into two categories, with the ball and without. With the ball option, you can lob, throw, shoot in certain areas near their opposing goal and once the ball is airborne, apply a certain amount of after-touch or spin.

Without the ball the options lie in jumping up, sliding or even being just a tad er... rough for the privilege of possession. Each character has a pitch position which is highlighted when near or in possession of the ball. For example, 'M' would denote a midfield position while 'A' means an attacking player.

This helps in assessing just where other players could be at any one time during a match and is invaluable in determining just how much support you might have in a situation.

Just throwing a ball around is fun in itself, as it is half, well a third to be exact, of the game, and as you score, defend and beat up each other, tokens appear on the floor. These must be collected by running over them with a player and can enhance a player or team performance in a number of ways.

A few tokens worth mentioning are speed ups and increased armour but perhaps most effective of all is the confusion token which temporarily reverses the opposition's controls!

Another equally bizarre effect is 'manic' which boosts individual and team attributes to total maximum. If you can't score when on this you really should leave the world of Speedball for something a little less demanding, say folding napkins.

The team you are generously given the honour of ownership is Brutal Deluxe and just playing their fixtures is two thirds of the challenge.

The rest of the simulation puts you in a managerial role with your players, or rookies, as they are in desperate need of both money and a certain amount of training.

To make money you can go for in-game tokens or just continue to win and get paid for it. To train you must take each member of your team into the gym and let a work-out commence. The player must improve aggression, attack and defence capabilities, speed, stamina, throwing capabilities, power, intelligence and stamina . All these must be increased, not just for certain positions but for the team as a whole, if tournaments are to be won.

The transfer market is a sure way of achieving legendary status but big players cost big bucks and the need to earn money puts you right back in the eternal circle, culminating in your skill and judgement during a game situation.

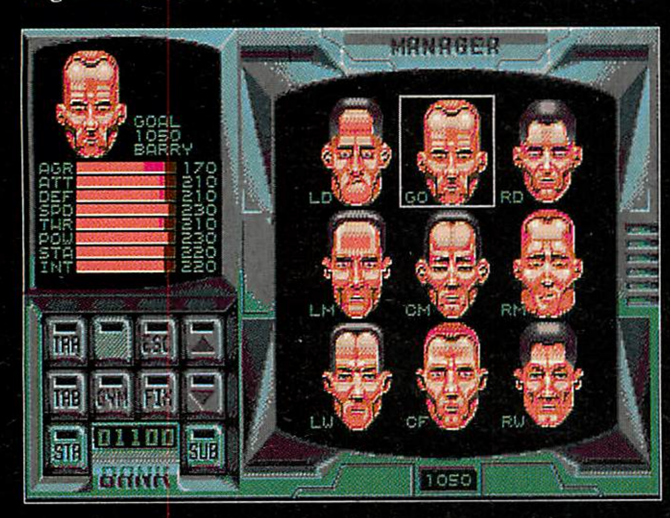
A game situation can be anything from knockout, league or a simple match for practice or proving a point with another human being. With league you really get a chance to perfect team attributes with the added bonus of being able to save your position, very handy with some 14 weeks of combat in the arena ahead of you.

The playing area holds a few surprises with warps and targets to aim for and just passing the ball to a near player becomes a task in itself at times.

This game is essential for all the right reasons, simple to play, fast and great fun for both a single player or a head to head. The basics of the game have been copied in many other clones but none have ever captured the essence of this rough and tough game of reactions.

*Speedball II* has been an astounding success on *all* formats from Sega and Amiga to the PC and now for under £30 you can discover just why. Buy it.

Steve Atherton



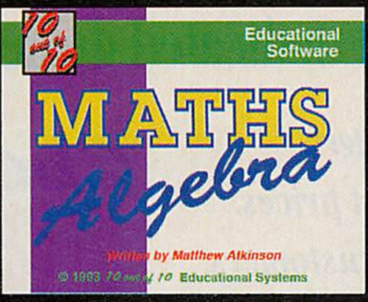
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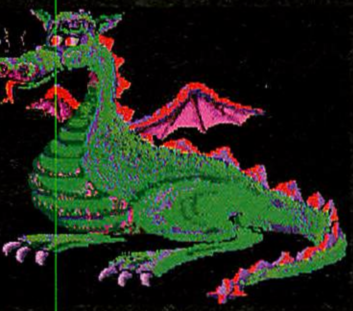
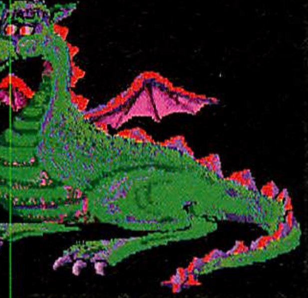
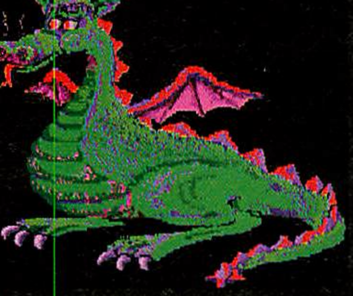

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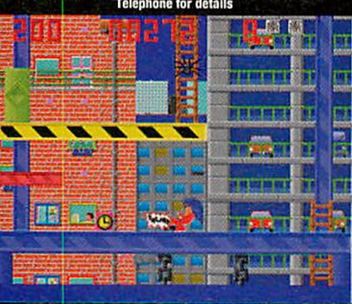


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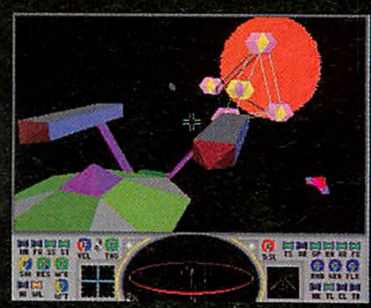
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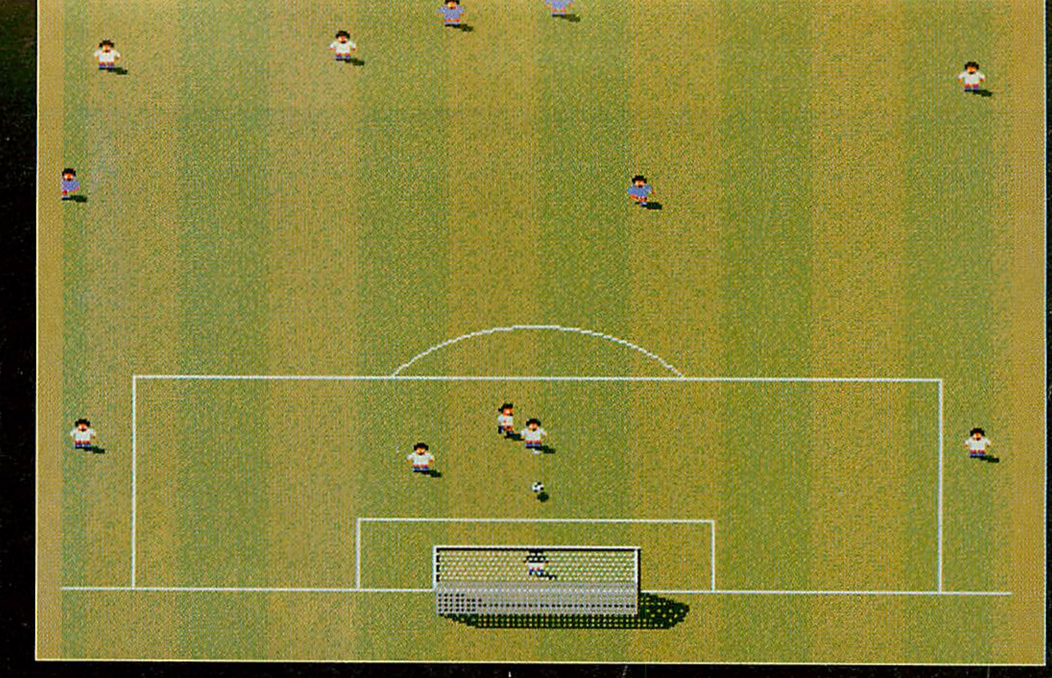
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# SENSIBLE SOCCER

It does seem this month that the conversion squad have been making some choice judgements and giving us the very best that other formats can provide.

*Sensible Soccer* is the game legends are made of and indeed has so far been responsible for country tournaments both here and all over the world.

The format is nothing new and the graphics are not the state-of-the-art you'd brag about, but once again that is not the object here.

*Sensible Soccer* is a game for everyone and has everything you need for a jolly good day out in front of the monitor, be it cheering from the back sofa or in control where it matters on the hallowed ground of your comfortable chair.

Since the nearest England will get to the World Cup in the USA is the scratch-off promotion in McDonalds, this game will probably attract more attention than the live coverage in the wee small hours of the morning.

The rules of soccer are easy and this is probably why it accounts for such a great part of our lives spent debating the interpretation of these guidelines. Questioning the referee's parentage and even whether the manager had a mother at all would seem to be everyday conversation for many on a Saturday. All this 'random' element has been built into the game with outcomes becoming seriously questionable at times. I have actually overheard some bizarre conversations regarding the (computer) referee's decisions.

If you are wondering why I'm going on about this it's because this game is a little cheeky, something that becomes evident with play.

Not many games can boast this sort of intelligence. The manual outlines just what to expect from the game and the rest is up to the players. You can compete in Cups, Leagues and Championships, be they fictional or real. With some clever tweaking of the parameters you can set up some surprisingly realistic matches that reflect the real game in an alarming manner. Not that I'm suggesting a pools predictor but with 1250 different players and 34 European teams to manipulate, some serious enjoyment lies ahead.




Mastering the basics will see you become a reasonable player but learning those little intricate details can make the difference between a good player and a star player.

The basics allow for dribbling, heading, passing, shooting and of course tackling. Getting to know these and where your team members might be at any moment in time allows progression to the professional features of the gameplay.

A player may then slide tackle, scissor kick and lift and bend the ball to defeat even the most experienced goalie and defending player. Rapid passing or 'one touch' will really show off the speed of this game but it is where this aftertouch is used that can make all the difference.

At first both keyboard and joystick commands might appear difficult to say the least, with just the aftertouch involving six combinations, but as with anything you settle down to instinct and the real game can commence.

The game highlights the player nearest the ball with a white number or positional marker so you can constantly judge support and goal potential. You can of course bring down a player at will but I wouldn't recommend this as yellow cards and even red cards are displayed in accordance with the situation. Too many yellows and the player won't be gracing the field in the next match!

Of course a football match is not just won on the pitch and certain managerial decisions will have to be made in who is fit or what formation to use. Substitutes can be made as can mid-game formation changes by calling the manager off his bench, but you should really be prepared before the whistle.

You can edit and customise teams and other aspects of the game can also be altered. You decide the match duration in minutes, whether you want instant replay for a goal and just how much human input you would like in the goalie.

Of course after all this set-up and involved competition the save feature is a real bonus and you can also save the highlights to a pre-formatted disk.

Try not to bore people rigid with your 'greatest ever' as they have the same effect as that home video of the traction engine rally you've been meaning to pull out for a family 'treat'.

Once again I urge you to buy, not because I'm a fan of football but because I am a fan of this game.

It has everything for the single player and even more for two or more participants, it's fast and the size of the pitch means some serious end to end stuff!

Steve Atherton

Since its inception, Acorn Ltd has done business around the world. During the halcyon (and lucrative) days of the 8-bit BBC machines in the early 1980s, they were extremely successful in establishing export markets. Even in the United States, with its many powerful computer manufacturers, Acorn claimed at one time to be outselling Apple in the schools market.

However, Acorn's fall from grace in the City of London in 1985, and the Olivetti takeover that followed, caused Acorn to re-trench and concentrate on the home market and in particular, education.

Fortunately, with the financial security of their new owners behind them, Acorn was able to continue research and development that lead to the Arm 32-bit Risc chip; consequently, the product range that was launched soon after this period, the Archimedes, was ahead of both its time and the competition.

So, not only was it possible for Acorn to become the market leader in the UK Education market and thus survive, but the hardware became actively pursued by a small band of maverick, techie users in Britain and in other countries.

Many of us involved with the Acorn world have long been aware of the underground of users throughout Europe who defied the overdeveloped herd instinct that prevailed in most computer markets, and chose to be dedicated Arc users, despite a lack of local infrastructure or support.

Eventually, reasonably-sized markets were established in places like New Zealand and Australia, but also in Canada and South Africa, and Acorn sold into these areas with varying degrees of success.

In 1990 Acorn, who had hitherto used a local distributor, established a wholly-owned subsidiary in Australia – Acorn Australia Pty – and this has apparently formed a model for the approach to be taken in other strategic parts of the world where large potential markets are perceived.

Now, after Maastricht, it appears Acorn is also paying close attention to the large European markets on our doorstep. So what is the company up to and what are the prospects of container loads of Acorn kit making their way through the Chunnel when it opens this year?

## Why export?

Before we look at the German operation in more detail, why should Acorn export? It isn't necessarily an easy option: one has to set up local infrastructure in terms of sales and distribution channels, support and spare parts and so on, and establishing a brand from scratch requires a good deal of marketing money.

What's more, a computer is an ornament or a piece of furniture unless it has decent software to run on it, so Acorn needs to think about the implications for the software houses when they go abroad.

This isn't too difficult an equation when exporting to the English-speaking world but is, of course, more of a problem when going to other places, involving significant expenditure to localise products for what is, certainly initially, a relatively small market.

Well, in ruthlessly minimalist style, the reasons behind the strategy can be distilled into a scientific formula as follows:

$$A = E \times M$$

where A is most of Acorn's total sales, E is the UK Education hardware market and M is Acorn's share of the Education hardware market.

The two variables E and M can be further examined. E is fairly constant, the UK Education hardware market is mature and its size is fairly predictable. It is unlikely to experience rapid growth in the near future, but on the other hand, it is not as affected by adverse trading conditions as the commercial world.

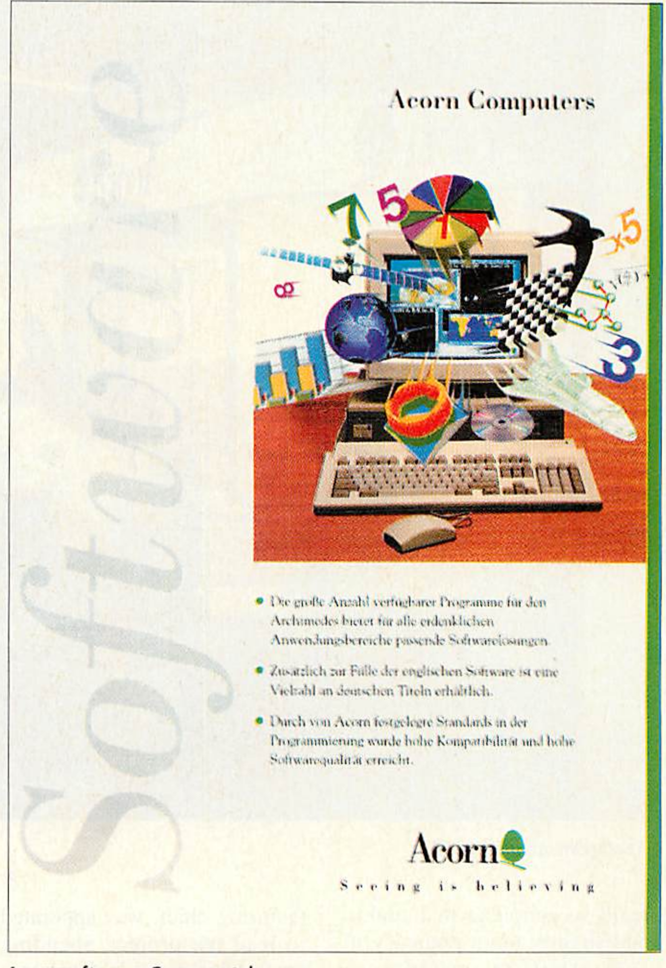
M has always been a large percentage of E since Acorn established itself as the principle hardware supplier to this market, but has been the subject of attrition almost ever since.

So M has been slowly declining for a long time, which is no problem at all so long as E keeps growing, but when E remains constant, then commences a potential long-term risk...

Of course, the world isn't

# Acorn in Germany

### Acorn is going after international business, and this time it's serious. Philip Ensor reports




**Acorn software, German style**




The Acorn stand at CeBIT

really as simple as that, and to add slightly more piquancy to the situation, computers continue to become more powerful for less money (the more bang for your buck principle) which means that your margins tend to reduce and you have to sell more kit to maintain your revenues. Not easy, is it?

So, interviewed recently at the world's biggest (and probably most influential) computer show, CeBIT in Hannover, one can see why Sam Wauchope (Acorn's Managing Director) said: 'It is a strategic decision for Acorn to develop business outside the UK.'

## Why Germany?

In 1993, Acorn formed Acorn GmbH, a wholly-owned subsidiary based in Dusseldorf. Acorn allocated a multi-million pound budget from its (not unlimited) resources and commenced the German project under the aegis of the IBU (International Business Unit) lead by Bob Coates.

Offices big enough to accommodate 20 people were leased for a period of five years and Uhlrich Reutter, (known as Uli), Acorn's manufacturing chief, was appointed to lead the project, spending part of his week in Germany, and the rest at his base in Cambridge. So why Germany?

For years, Acorn has done a certain amount of business within Europe. The maverick, techie users referred to above would appear regularly at shows from various points of origin including Germany, France, Holland and Italy, and could be seen at events, including Harrogate and Wembley, buying software and third-party hardware products with enthusiasm.

In Germany, these enthusiastic end users (affectionately known as 'freaks', which does not have the same connotations in Germany as it may have in Britain), whilst relatively thinly spread, managed to provide sufficient business for some dealers to survive, selling Acorn-related products usually alongside Apple, Amiga or PCs.

Many of the heroic dealers who survived this lean period are now enjoying distribution rights for the German market for a variety of key players in the Acorn world, including Computer Concepts, Longman Logotron, Gamesware and others.

They managed to establish a base of Archimedes users estimated to be more than 25,000 and now feel, at last, that the cavalry has arrived in the form of Acorn and the principal software houses.

Risc OS was translated last year and Uli Reutter stressed that 'it is vital to have German software available' and the key players are already working hard to localise their products.

The German market is also the biggest in Europe, and as Sam Wauchope said at CeBIT: 'In most markets we will continue to use local distributors, but the opportunity in Germany is so big that I felt we ought to establish our own operation.' He made it clear that he thought growth in Europe was the way forward for Acorn.

Another couple of reasons why Germany could be the ideal market for Acorn is to do with rival manufacturers and the market profile.

The market is essentially a PC market but the dealers who sell PCs survive on an extremely small margin (as little as three per cent), Apple does not win a large market share in the home and consumer areas, and Commodore was successful for a number of years but it's share of the market appears to be declining quite rapidly at present.

Finally on this point, the Education IT market is underdeveloped (that flies in the face of popular misconception, doesn't it?) and as Uli Reutter puts it: 'Education in Germany is in the future – but if we can crack it the potential is massive.'

So, how far have they progressed with this strategy?

## CeBIT

Well, from the evidence at CeBIT, which is a powerful business-to-business show, and judging by the non-stop discussions with potential dealers, software houses and the press (including a TV interview for Uli Reutter on a national programme), interest seems intense.

Acorn did not show the Risc PC on the public areas of the stand as it won't be released in Germany until later in the year, but specially-invited people were discretely whisked into the room to see it.

Acorn is especially interested in the multiple retail chains and catalogue companies, who are presently organising themselves for the Autumn and Christmas market.

Uli Reutter provided a clearer picture: 'CeBIT provides us with an overlying presence to show what we are about. Dealer recruitment is going well and the number is currently in excess of 60. There are more being recruited, including, of course, the multiples, who are showing very great interest.'

What of the old criticism, which certainly applies in the UK when Acorn has tried selling its product through multiples who do not understand it and do not know how to sell it effectively?

'The German multiples are different in the sense that they employ more specialists and their staff receive better training,' said Uli. 'The market we are aiming at initially through this channel is the "freak" and the consumer, and we believe we can be as big as the Amiga market was here.'

As well as the Amiga market looking tired, Uli made it clear that many dealers selling PCs

are looking for new products to sell that will allow them to keep more margin.

What of the world premier of the PowerMac from Apple, which took place at the show (to huge interest, given the number of people clustered around their stand)? 'I welcome this,' says Uli. 'It will make 32-bit Risc a buzz word and will have an adverse impact on PC sales.'

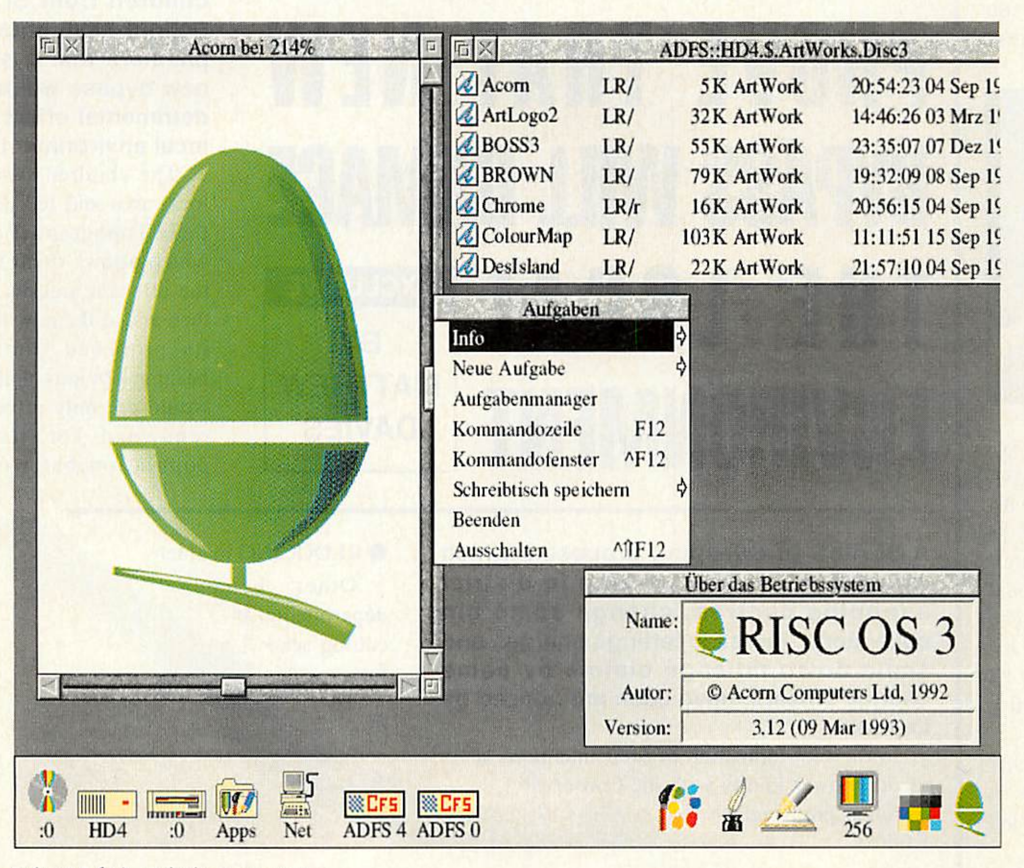
The Acorn office is currently staffed by three people, apart from Uli and others from the IBU who are regularly in Germany, such as Bob Coates and David Boughey.

They are Hermann Hähner (Sales and Marketing Manager) who previously worked for Commodore and knows the multiples well, Guido Griese (Technical Support Manager) and the very recently recruited Nicole Ramotsa (Administration Manager). Recruitment is continuing.

Sam made it clear that he felt general progress was being made in the right areas and said that the mix of dealers to be recruited was important.

He said 'the appointment of Herman Hähner is very significant; he has tremendous experience of the key players and the market' and that the aim of having Acorn's products in the retail chains and catalogues in time for the Christmas market was going to plan.

He also said, 'we know we will have a very good hit rate once the product is seen'.




At least Info is spelt the same way

## Risc PC

German versions of the new machines from Acorn are due to be launched later in the year. Last October a German roadshow took place, supported by the principle dealers and software houses, to show the recently launched German versions of the existing product range.

There are similar but grander plans for 'Roadshow 2, Risc PC Launch' starting in Holland, with a strategic tour around Germany and possibly a finish in Switzerland, the distributor for which (Evolution Trading) will be supplied from Dusseldorf in the future.

The Risc PC should greatly appeal to the power-user attitudes in the German market, where there is an emphasis on speed, features and functionality.

This was illustrated to me by a succint comment from one of the German dealers, who said 'if a home user buys a PC, he will also buy *D-Base*, even if it's only to manage phone numbers'.

An additional significant factor in the German market is the technical expertise of users, and the requirement for a powerful graphics machine, for which, of course, the new Acorn platform will be ideal.

Price will, naturally, be an issue, but there should be plenty of scope for Acorn and the German dealers given the price Apple has set with the Power Mac, which is not cheap even at the entry level, when you have added a monitor, keyboard and an extra 8Mb of memory to make it usable.

Sam said about the new products in Germany: 'The new range and new technology gives us the ability to put ourselves in front of people who wouldn't necessarily have talked to us before, and therefore new opportunities open up for us.'

## Marketing

Since October 1993, when the German subsidiary was established, Acorn GmbH has undertaken the following activities to promote Acorn's translation into German:

*Appointed the DAMM advertising agency which organised the 'Seeing is Believing' campaign throughout Germany.

*Introduced the public to Acorn computers through a roadshow system.

*Completed plans for the relaunch of Archimedes magazines.

*Appointed Text 100 Germany – a public relations agency – to run Acorn's press and public relations.

*Launched an aggressive dealer and reseller recruitment campaign.

*Offered financial support for software developers to port programs to run on Acorn 32-bit Risc-based personal computers.

*Planned the introduction of new products for the German market later this year.

*Planned a 'Seeing is Believing' tour throughout Germany, where Acorn and software developers can present their products to the public.

## Will Acorn succeed?

The short answer is yes. Acorn has taken a high-risk strategy with the German campaign but has stopped short of betting the entire company on it, and it has approached this market with all the lessons it has learnt in the UK and in other parts of the world.

It has recruited a highly respected team in Dusseldorf, the right mix of enthusiastic and professional dealers and has mobilised the support of the key software developers in localising its products for this market.

There is undoubtedly a risk, but it is manageable, and standing still is not an option. Sam Wauchope could not have got where he is today without taking risks and the potential rewards could be huge.

I would not be greatly surprised if in the not too distant future, Acorn finds in Germany a market bigger than it has in the rest of the world. The potential is there, and Acorn is making the right moves to capitalise on it.

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Last week the Express reported on the complaints of management of Edgeley branch was not aware of manager on December 10 to make the views of the

"The cage in which aluminium cans are stored was

# SCHOOL CHILDREN PROVE THAT NEW BYPASS WILL DAMAGE THE LOCAL ENVIRONMENT

**EXCLUSIVE**

**BY MATTHEW DAVIES**

**USING an innovative new program on their classroom computer children from St. Chad's School have shown town planners that a proposed new bypass would have a detrimental effect on their local environment.**

The children surveyed the local area and fed details into their Topographer program, which allows them to look at the relevant area in 3D. They then added the new road along its proposed route and it became obvious that the road would not only affect an area renowned for its badger population but would also distract children in the classroom as they would be able to see traffic moving along the new road.

The children even went as far as to propose a new route for the road to the town planners. The proposed route would have a negligible impact on the area but still provide the much needed relief to existing roads.



**A SERIES of sweeping proposals which would abolish free parking in district shopping centres, change some bin collections, increase lettings charges and scale down mileage claims by some council officers, have been announced by Labour.**

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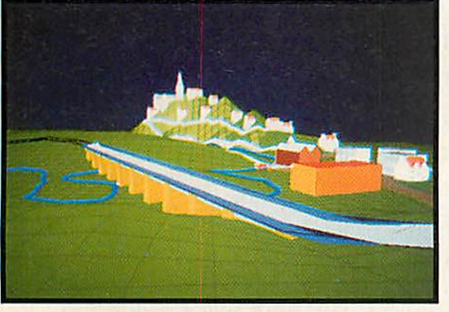
Other econ- departmental b- cutting scho- fees.

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*Topographer* is a major application for the Geography curriculum which allows children (and teachers) to have lots of fun whilst learning all about maps, contour lines, valleys, rivers etc. In fact *Topographer* covers virtually all items found on a map.

The real break through with *Topographer* is its 3D section which allows you to convert a 2D map into a 3D model on screen. Imagine turning a set of flat contour lines on a 2D map into a 3D model which clearly shows the hill — no more cardboard cut out models or papier mache! You define where you look from, and what you look at.

*Topographer* also covers aspects of the IT and maths curriculum with its modelling capabilities. Just stop for a minute and think of the projects that you could do with *Topographer*. You could make a map of the local area with churches, pubs, woods etc. and then view it from various places. If there is a bypass proposed you could add it in to the existing landscape and see where it is visible from and what impact it is likely to have on the community. I'm sure you can think of a hundred and one topics.



◆ Fully RISC OS 2 & 3 Compliant and 1 megabyte friendly ◆ Suitable for all ages from 6 onwards ◆ Easy and quick entry of all symbols (over 100) ◆ Wooded areas which translate into impressive 3D landscapes ◆ Definable map size and scale which can be linked to the national grid references ◆ Powerful 3D mode giving a true representation of the landscape ◆ Stunning 3D models which can be saved as a sprite file for use with other applications.

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This is a simple but clever idea. *Card_Shop* by Clares is a program for primary school children to create greetings cards, but unlike most other activity programs, the final product requires some non-computer work both before and after the program is used.

In fact, the computer part of the work represents less than half the total time it takes to produce a card from start to finish. This will enable the program to be used as part of a project involving not just IT, but Technology and English, and possibly some other subjects.

The program requires four things from the user. The first part – the front of the greeting card – requires the user to select a border, a graphic and a greeting. The package comes with a substantial bank of artwork in *Draw* format, compressed using Acorn's *Squash*.

# The complete post office

Geoff Preston designs cards with this Primary school package from Clares

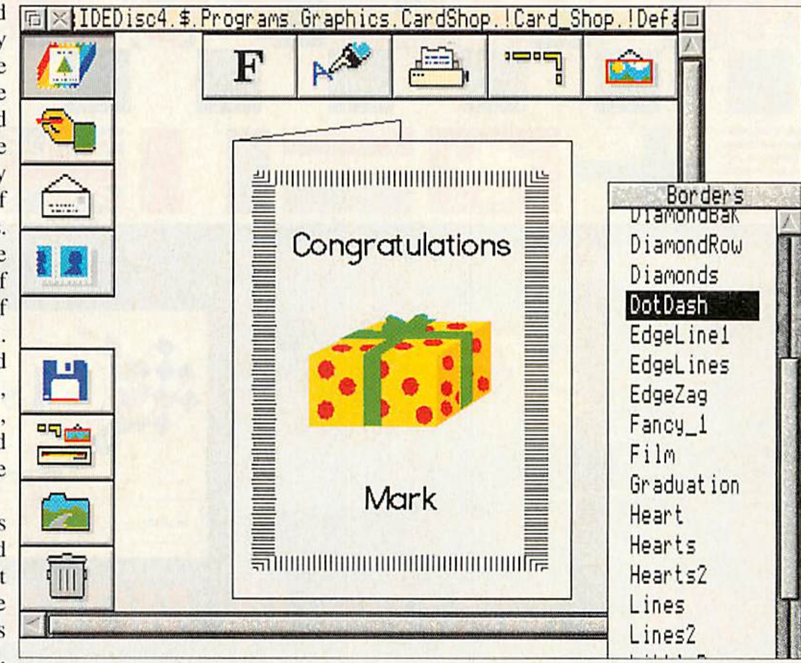
## Artwork

The graphics and borders can be placed into directories and will be displayed as Risc OS menus. This means that the teacher can fill the directory with artwork appropriate for that time of year. (There's not much point in having sprigs of holly in June!)

When the graphic or border is selected from the menu, it is positioned automatically and further intervention is not possible. When the button is pressed for entering a phrase, a window appears into which the phrase is typed.

Also displayed is an expandable spelling list of common words like anniversary and greetings. The two lines of text are entered and automatically positioned. The second part is the inside of the card and this is the user's opportunity to write one of those sugary rhymes. This part of the work could, of course, be part of an English lesson. The text is entered into a box and, when complete, will be positioned in the user's choice of outline font.

The third part is the envelope and the only input required is the name and address of the recipient, which is entered in the same way as the rhyme and is positioned automatically.



Choosing a border for your card

The fourth part is the stamp or stamps where the user has to select a price and a picture for the stamp. Up to fifteen stamps can be generated in three rows of five.

## Card assembly

Having designed the card, written the envelope and designed the stamps, the whole lot is saved and then printed.

Once printed, the user then has to assemble the various parts. This takes the project away from the computer so that the children can practice some other skills.

The two parts of the card must be cut, glued and folded, and then coloured if necessary. The envelope needs to be assembled by carefully cutting out the parts, folding them, glueing on the wings and the stamp, and then placing the greetings card inside.

Overall, the program works very well. It is simple to use and it is refreshing to see a program that takes the user beyond the computer, focusing on a final product. My five-year old twins had no difficulty whatsoever and were able to produce some very pleasing work with little help from me, until it came to the assembly of the parts.

I do have a couple of concerns however. I feel the output is unnecessarily heavy on paper. Each greetings card and envelope outputs to five sheets of paper, where really it could be done on three.

All right, it's only two pieces of A4 paper, but multiplied by the number of children who will use it, including the printouts that go in the bin because of a spelling mistake and there is the potential for a lot of waste.

Networking is now a real possibility for schools. Acorn have developed an Ethernet-based network specifically for primary schools and with this in mind, I think it's short sighted for any software house to produce programs which save files as applications.

A directory containing a dozen or so *Card_Shop* files will take a long time to open over a network. If several children open the same folder simultaneously, it can be a very long wait indeed.

*Card_Shop* is designed for primary school children (Key Stage 1 and 2), but Clares says some older children will also enjoy using it. I feel this may be wishful thinking as many will recognise the limitations and will turn to other software to achieve better results.

## Product details

**Product: Card Shop**
**Supplier: Clares**
**Tel: (0606) 48511**
**Price: £24.99 (single user)**
**£50 (site licence)**

# National Curriculum History

Geoff Preston concludes his exploration of National Curriculum History at Key Stage 2

Last month I covered Unit 1 (Invaders and Settlers) and Unit 2 (Tudors and Stuart Times) of Key Stage 2 History. This month I'll finish off the subject by looking at Units 3 to 6, and Supplementary Units.

Last month's prices, which exclude VAT, are for primary site licences, except for those marked * which are single-user only, with site licences available at extra cost.

## Unit 3 - Victorians

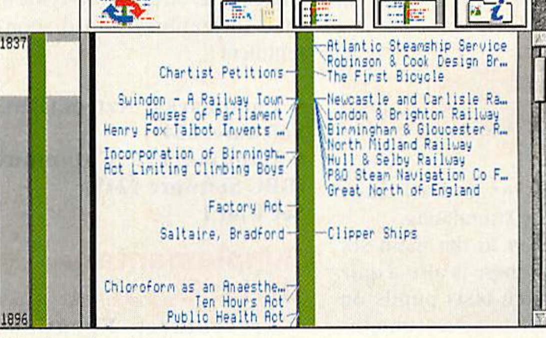
**• Time Traveller: Victorians (ESM, £32.50 software only, £57.45 full pack)**

*Time Traveller: Victorians* is a time-line program, but with the added feature of being able to compare two sets of events on the same vertical timeline. For example, pupils could compare the development of railways with the development of canals.

Much of the artwork used in the *Victorian* pack was produced by yours truly, but despite this I can still be objective. As well as comparing information already given, pupils can add events to the existing ones, and even create new subjects.

This part of the program, I feel, works best as a class activity. Cards containing graphics and text are linked to the timeline thus giving additional information.

*Victorians* is divided into five subject areas: Changing Society, People, The Empire, Transport and Working Life and each of these is then sub-divided. Information is available in the form of a 'card' on each category and sub-category. The graphics are used to good effect and overall this really is an interesting way to deliver this topic.




*Victorians* from ESM

**• Landmarks: Victorians (BBC Software, £24*)**

BBC Software has a program called *Landmarks: Victorians* for this unit, but I have to say I have one reservation about *Victorians*. As with the other in the series, the user is provided with a guide to talk to and extract information from.

The Victorian guide is a young boy called Ernest who lives in a village in the West of England and is recovering from Scarlet Fever.

The dialogue, or at least Ernest's part, is written in dialect. I can appreciate that this adds to the flavour of the times, but I'm not sure it's appropriate in the context of a program designed, amongst other things, to teach correct English.

**• Timelines: Victorian Britain (Soft Teach Time Lines, £22.50)**

This data disc requires the original *Time Lines* program to run. If you have this software, it seems obvious to buy all the data packs to get maximum use from the initial investment.

As good as this program is, I don't think you could justify the cost if only one set of data is purchased. The software allows additional events to be included and the in-built word processor enables pupils to easily add text to the information cards.

## Unit 4 - Britain since 1930

**• Time Traveller: Britain since the 1930s (ESM, £32.50 software only, £57.45 full pack)**

*Time Traveller: Britain Since the 1930s* has a data pack divided into Famous People, Inventors and Inventions, Society, The War and Transport. Apart from searching through the data provided, *Time Traveller* again allows pupils to add to the data by creating new subjects and new events.

This is probably best achieved as a small group activity and it is at this point that the program becomes really exciting for the pupils.

**• Landmarks: Second World War (BBC Software, £24*)**

Although World War II occupies only six of the 60 years since 1930, *Landmarks: Second World War* is well worth considering as it really does give the user a good idea of what life was like at that time.

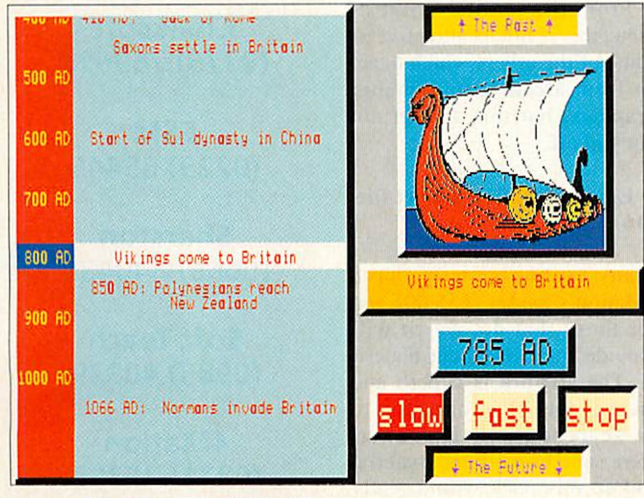
The guide for this stroll down memory lane is a ten-year-old girl called Jean from Westbury-on-Sea in Somerset. The 'conversations' you have with her via the keyboard are very informative and once you get going it's fun trying to find out about her life and her family during the Spring of 1940.

**• Data 100 Series: World War II (Appian Way, £19.50)** See Unit 1

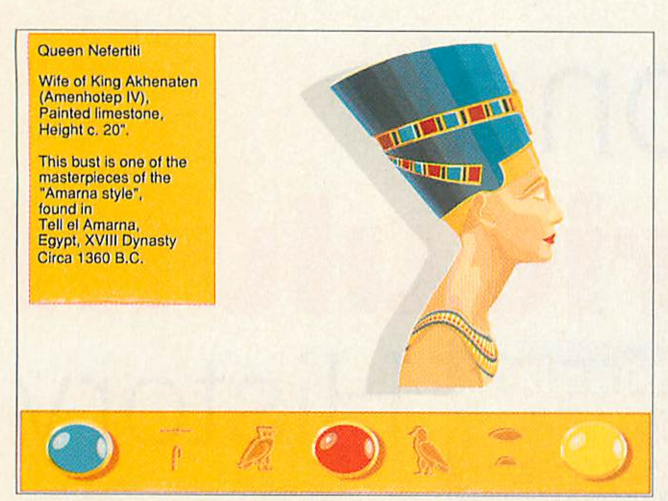
## Unit 5 - Ancient Greece

**• Ancient Greece (Chalksoft, £25*)**

*Ancient Greece* is actually an assortment of very carefully thought-out activities based on Ancient Greece. There are six main areas of study and each has an activity associated




Animated time lines from Chalksoft



Egyptian clip art for 4Mation's *SmArt*

with it.

*Knossos 2000BC* includes a labyrinth puzzle, the *Siege of Troy 1200BC* includes a jigsaw puzzle to build a wooden horse and *Athens 399BC* includes a guided tour of Athens and introduces such concepts as democracy, voting and civil rights.

The program opens with the user being offered a choice of places to travel back to through time. The display then switches to an animated time line, which begins at the present day and marks major events in history as it scrolls to the selected site/date.

This in itself is valuable, as it gives a very clear idea of where events lie in relation to each other.

Once at the destination, the user can get information from the factfile and/or go on to the activity (which may require information from the factfile).

This is a very appealing program indeed and although I didn't have time to test it with a class, I tried it with my nine-year-old son and five year old boy/girl twins and all three found it very stimulating.

In addition to the main six study areas, there is also a quiz section which tests pupils on how much they've remembered, and a glossary of terms which is written in a clear and concise fashion.

Chalksoft can also supply a support pack containing an activity book, postcards and slides for £17.50, and a library-book set of nine books to support the topic for £67.22.

**• Time Lines: Ancient Greeks (Soft Teach, £22.50)**
**See Unit 2**

## Unit 6 -Exploration and Encounters 1450-1550

**• Aztecs (Sherston, £39.95*)**

Sherston's *Aztecs* is quite different from their Arcventure series. In this adventure the user is transported back to 16th century Mexico via a time-warp in the Bermuda Triangle.

Apart from that it's a clever, well - presented program which gives lots of information including counting in Aztec numbers and using the Aztec calendar, as well as showing some of the customs of the time.

The pack also contains a number of workcards, although I'm not sure the language used on some is appropriate for 7-10 year olds. For example, a part of one reads: 'Would such an inflexible education system lead to jealousy and discontentment?'

**• Landmarks: Aztecs (BBC Software, £24*)**
**• Landmarks: Columbus (BBC Software £24*)**
**See Unit 1**

## Supplementary Units: Egypt

**• Arcventure: Egyptians (Sherstan, £31.95*)**

*Arcventure: Egyptians* is basically the same as the previous archaeological dig programs – find buried treasure, find out about the treasure and write daily reports on the work.

Again, there is a lot of additional material, which is thoroughly researched and attractively presented in a lively way that is certain to capture children's imaginations.

**• Landmarks: Egypt (BBC Software, £24*)**

*Landmarks: Egypt* is much the same as previous *Landmark* programs. Like the others, there are a lot of activities provided in the Pupils' Guide and plenty of help for teachers and parents in the Teacher's Guide.

From the pupils' point of view, this is not as attractive as some of the others which benefit from arcade-game quality graphics, but this should not put you off.

**• Egypt (4Mation smArt file, £16)**

Many schools will have 4Mation's *smArt* (£55.00) and for those that do, *Egypt* will provide some excellent material. The artwork is superb and there is lots of information to be searched out. However, there is no background material and so this pack would really be used in addition to the main contenders.

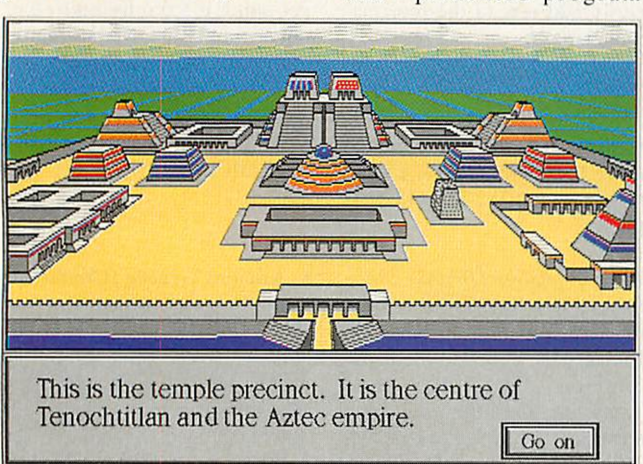
**• Ancient Egypt (Chalksoft, £25*)**
**See Unit 5**

## Conclusion

Most of the top education software houses have software for each unit of study. Schools will need to carefully consider if it is better to follow a policy of 'reinforcement by repetition' and purchase what are effectively different versions of the same program, or broaden pupils' IT skills by using different types of program which, after all, are designed to do the same thing, albeit in a different way.

There is one noticeable omission from this review: *Frontier 2000*. This program has already had all the superlatives tagged onto it. Rather than repeat what has already been written, have a look at last month's article on using *Frontier* in the classroom.

Incidentally, in last month's issue we stated that the price of the full resource pack for Frontier 2000 was £199.95 + VAT. This should have read £109.95 + VAT and we apologise to CSH for this error.



Sherston's *Aztecs* takes place in 16th century Mexico

## Telephone numbers

Appian Way
091 - 373 1389

BBC Software
(0223) 425558

Chalksoft
(0775) 769518

ESM
(0223) 65445

Sherston
(0666) 840433

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*The printer is supplied complete with all consumables, cables and documentation as well as RISC OS printer driver software for Acorn RISC computers.*

**£999**
(Single-bin version)
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*Calligraph laser printers need no extra expensive memory or fonts (unlike PostScript or Laserjet type laser printers) and produce complex pages of text and graphics in tens of seconds, rather than up to 20 minutes or more required by other printers.*

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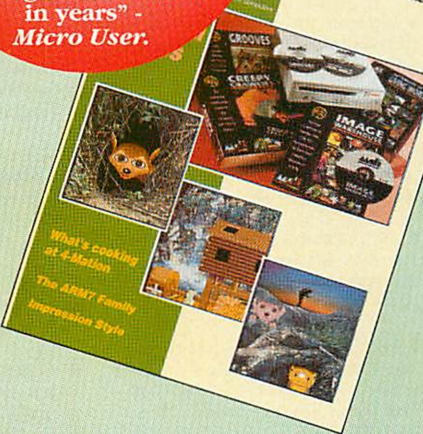
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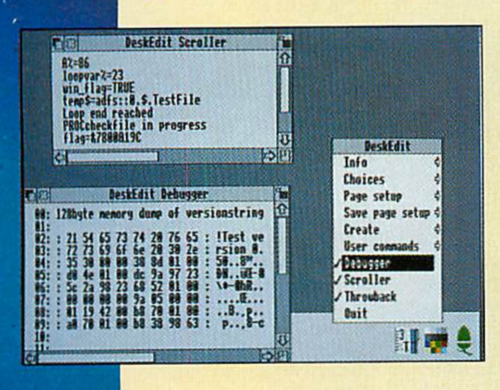

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**A wealth of procedure & function finders**

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**Multiple Search options**

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**Much more**

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| | |
|---|---|
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| **Features** | ***** |
| **Value for money** | ***** |
| **Overall** | ***** |

And as you may have heard - DeskEdit is so good that it is used within Acorn itself.

**A single editor for a thousand different tasks**

Moreover, DeskEdit is just as at-home with text (handy for editing Obey files, writing letters, or complete books), and with the C language, where it provides most of the features offered to Basic users (where applicable) with some others added - including a unique and powerful syntax checker.

*DeskEdit comes with a fully illustrated 70 page manual (with comprehensive index), a function keystrip and a smart quick reference card - together with a Desktop Dustbin.*

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● Archimedes user's club. For more information write to A_U_C, 178 Red Lion Road, Surbiton, Surrey KT6 7QY

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● BBC Model B with twin 40/80 double - sided drives and Microvitec colour monitor, Wordwise and transferom plus lots of software on disc, £195 ono. Tel: 021-308 7335

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● Archimedes games and teletext receiver for sale. Send SAE for details to Mr G Waits, 8 Cedar Drive, Erdington, Birmingham B24 0DL

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These do-it-yourself refills can be used with any printer where the head and ink reservoir are combined, ie, DJ-500, BJ10/200. Please do not send empty cartridges. Please note that colour quality may not be 100% from a black cartridge refilled with another colour. We cannot guarantee against dried up empty cartridges and/or blocked nozzles. **If you want 100% results only buy original cartridges or buy a colour printer!**

## QuickTile v1.01 £25+VAT

Up until now it has only been possible to print posters from Draw & Sprite files. Now with QuickTile you can create posters from ANY RISCOS application, including Impression. Simply enter the size of poster required & select PRINT from the application! QuickTile does the rest, printing each tile with crop marks and tile references.

**Requires RISCOS 3.10 or later.**
**Send v1.00 disc back for free upgrade.**
**Upgrade from Tiler for £15+VAT**

Hardware, Software & Books (All prices exclude VAT)

**Ring now for details of the new machine!!**

### Pocket Book/Psion

| | |
|---|---|
| Acorn Pocket Book | £169 |
| Psion 3 256k | £175 |
| A-Link for either of the above | £51 |

### A3010 Series

| | |
|---|---|
| Action Pack | £336 |
| TV output, 1Mb RAM, FD, Zool, WP | |
| Learning Curve System | £620 |
| 2Mb RAM, Monitor, Advance, PCE | |

### A3020 Series

| | |
|---|---|
| Floppy Disc System | £660 |
| As above less Lng Crv & joystick prts | |
| 60Mb Hard disc System | £800 |
| As above with 60Mb Hard disc | |

Add £43 for AKF52 MultiScan Mon.
Add £107 for AKF50 0.28dp Monitor

### A4000 Series

| | |
|---|---|
| A4000 2MHD80 Syst | £830 |
| 2Mb RAM, HD Floppy Drive, 80Mb hard disc, AKF40 Standard Monitor. | |

Add £43 for AKF52 MultiScan Mon.
Add £107 for AKF50 0.28dp Monitor
For 1Mb 386 PC card add £250
For 4Mb 486 PC Card add £450

### A5000 Series

| | |
|---|---|
| A5000 2MHD80 Sys | £1250 |
| A5000 4MHD160 Sys | £1420 |

Add £200 for Microvitec CubScan
Add £64 for AKF50 0.28dp Monitor

### Learning Curve

| | |
|---|---|
| Learning Curve Software Pack | £42 |

Includes Advance, PC Emulator & demos of popular games & applics

### Home Office

| | |
|---|---|
| Home Office Pack | £85 |

Includes EasiWriter2, DataPower, PipeDream4, PC Emulator, & many demos of popular games & applics. The above packs cannot be purchased with A3010 or seperately.

### Acorn A4 Series

Free PC Emulator

| | |
|---|---|
| A4 4MHD Portable | £1649 |

### Monitors

| | |
|---|---|
| Acorn AKF30/40 Standard Mon | £210 |
| Acorn AKF52 MultiScan Mon | £259 |
| Microvitec Cub Scan 1440 | £379 |
| 0.28dp, 40 presets & 3yr Warranty | |

### Hardware Upgrades

| | |
|---|---|
| ARM3 (25MHz, Inc FPA socket) | £159 |
| Joystick Interface (all m/c's) | £28 |
| Midi Expansion Card | £65 |
| Powerpad (dual) (Gamesware) | £34 |
| Scanlight Video 256 | £215 |
| ScanLight Professional | £549 |
| Vision Digitiser Col. | Int £99/Ext £112 |
| Hi-Vision Digitiser A5000(1 only) | £129 |
| Vision u/g's | Mono-Col £70 Col-Hi £60 Mono-Hi £120 |

### RAM Upgrades

| | |
|---|---|
| A3000 Up to | 2Mb £55/4Mb £129 |
| A3010 Up to | 2Mb £45/4Mb £149 |
| A3020/A4000 Up to 4Mb | £89 |
| A5000 Up to | 4Mb £89 / 8Mb £349 |
| A400 RAM | £45 per Mb |

### Hard Discs/MagOpt

The following are complete systems.

| | |
|---|---|
| **IDE A300/A400 Series** | **Internal / Ext** |
| 245Mb 15ms Cache | £295 / £375 |
| **IDE A5000 2nd Internal Drive** | |
| 245Mb 15ms Cache | £199 |
| 540Mb 12ms Cache | £499 |
| **A3000 HCCS HardCards** | |
| 20Mb + User Port | £159 |
| 80Mb + User Port | £229 |
| **A3010 HCCS HD Multi-Podule** | |
| 20Mb + User Port | £215 |
| 80Mb + User Port | £299 |
| **SCSI Archimedes Internal** | |
| 127Mb 17ms Cache | £319 |
| 245Mb 15ms Cache | £409 |
| **SCSI 128Mb Magneto Optical Drive** | |
| 128Mb Internal Mag-Opt Drive | £549 |
| External case for above | £69 |
| 128Mb Mag-Opt Blank Discs | £35 |
| **SCSI CD-ROM Drives (Excl Card)** | |
| Ext Toshiba caddy loading | £399 |
| CD-ROM 330kb/s with 200ms access | |
| Ext Toshiba tray loader 350ms | £319 |

### Printer Consumables

| | |
|---|---|
| BJ-10/BJ-200 Ink Cartridge | £18/£19 |
| BJ-300 Ink Cartridge | £17 |
| BJ-600 Black/Colour Cartr. | £8/£9 |
| BJ-800 Black/Colour Cartr. | £18/£21 |
| DeskJet500 Mono/Col Cartr. | £23/£24 |
| Swift24 Mono/Col Ribbon ea. | £7/£15 |

**Remember Carriage is free on most items**

### Printers (Inc Cable)

| | |
|---|---|
| Canon BJ-10sx / Turbo | £175 / £210 |
| Canon BJ-10 Sheet Feeder | £50 |
| Canon BJ-200 / Turbo | £240 / £275 |
| Canon BJ-230 / Turbo | £300 / £335 |
| Canon BJC-600 Turbo | £499 |
| Canon BJC-800 Turbo | £1220 |
| HP LaserJet 4L (300dpi) | £539 |

### RiscOS 3.1 Upgrades

| | |
|---|---|
| A300/A440 Series | £97.88 |
| A400/1, A3000, A540 Series | £75.75 |
| Bulk Pack of ten upgrades | £339.00 |

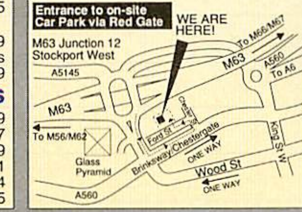
### Books (No VAT)

| | |
|---|---|
| Acorn RISCOS3 PRM's | £99.00 |
| Add £7+VAT carriage for PRM's | |
| Acorn BBC Basic VI Guide | £19.95 |
| Acorn AASM Manual | £25.00 |
| Acorn ANSI C v4 Manual | £25.00 |
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| Begin's Guide to WIMP Prog | £12.95 |
| DTP on the Archimedes (Sig.) | £12.95 |
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| Game Maker's Manual (Sigma) | £14.95 |
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### Terms

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### Application Software

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| Advance (Acorn) | £95 |
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| Almanac3 (Stallion) | £67 |
| ArtWorks (CC) | £124 |
| With Free TopicArt disc | |
| AudioWorks (CC) | £49 |
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| Impression Publisher (CC) | £135 |
| Impression Style (CC) | £95 |
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| Investigator 3 (Vertical Twist) | £47 |
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| Sleuth (RISC Dev) | £47 |
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| Superior Speech! | £15 |
| TurboDrivers BJ or HP (CC) ea. | £42 |
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| Alderbaran (Evolution) | £26 |
| Axis (TBA Software) | £19 |
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| Birds of War (4D) 2Mb | £25 |
| Black Angel (4D) | £25 |
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● BBC B DFS and wordprocessor database, £50. Akter 5" dual disc drive 40/80, £49. Prestel modem and Rom, £20. 5" discs, 50p. (0329) 663492

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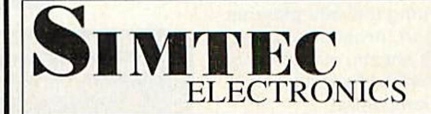
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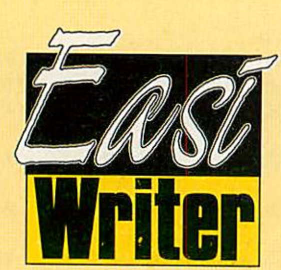
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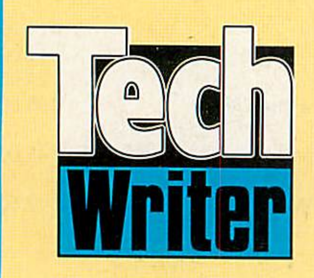
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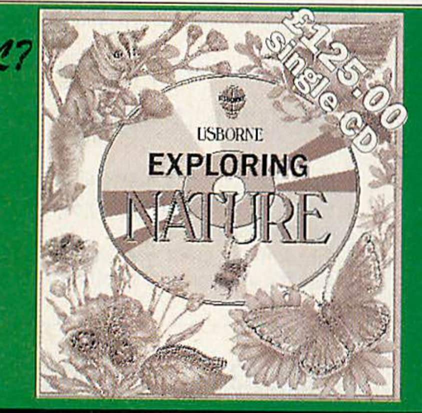
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*Isn't Nature*
**WONDERFUL?**

Almost all children are fascinated by living things. This CD-ROM, with its amazing illustrations taken from original USBORNE artwork, will help children towards a greater understanding and appreciation of the plants and animals around them.

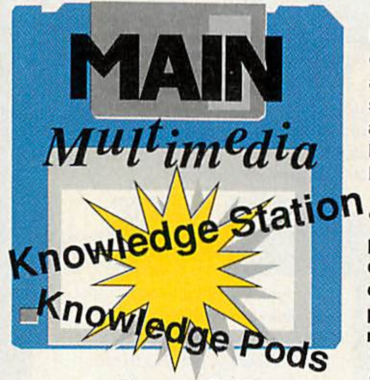
This detailed and informative application designed as an activity-based exploration will appeal not only to younger children who will enjoy the experience of discovering the natural world but also to older children as an introduction to a serious study of nature.

MAIN MULTIMEDIA




This CD-ROM pack also contains a user guide, teachers notes and A4 work sheets. Only from Hampshire Microtechnology Centre.

---




- Now available -
£60.00 site licence

KNOWLEDGE STATION is an application that you use to explore knowledge. It is an activity based tool offering a structured and flexible approach to learning. Information is piped into Knowledge Station in KNOWLEDGE PODS.
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*"Writing for a Purpose"*

---

## Why Wrestle?

when you could learn from




A Genesis application from Hampshire Microtechnology Centre, written by *Chas Duckhouse* (Bridges, Space Egg, Move-IT & Oblivion).

Lots of interesting and exciting text and pictures on Myths and Legends, Sport, Architecture and much more. including work sheets, quizzes and dictionaries. As recommended by Holbrook Junior School, Hampshire!

---



## In Touch

*InTouch* is a concept keyboard program aimed at the early stages of children's cognitive development.

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NUTRITIONAL ANALYSIS?
*It's a piece of cake!*

## NUTRIENTS

This new version has more foods and the option of a calculator to help pupils multiply or divide amounts of ingredients in a recipe. Also included is 'LABELLER' which produces labels giving accurate nutritional information of a food product.The CSV files can also be loaded into databases or spreadsheets so that the pupils can do further work using their analyses. The price of this upgrade has been kept at £99.00 for a site licence.

A PROGRAM TO ANALYSE YOUR DIET !

The complete diet analysis package from Hampshire Microtechnology Centre.

# From acorns to oaks

Geoff Preston looks at the winning entries in the Acorn User Education Competition

This year's Acorn User Education Competition attracted entries from a number of schools in the Yorkshire area. The competition required students to produce an A5 booklet containing both original text and graphics.

The standard of work was excellent, but I was particularly impressed with the work in the under 11 age group. Many of the children had used Acorn computers for some time, but only since September had many begun using Archimedes computers – presumably since delivery of computers from the Tesco-Acorn scheme. Judging, as expected, was very difficult.

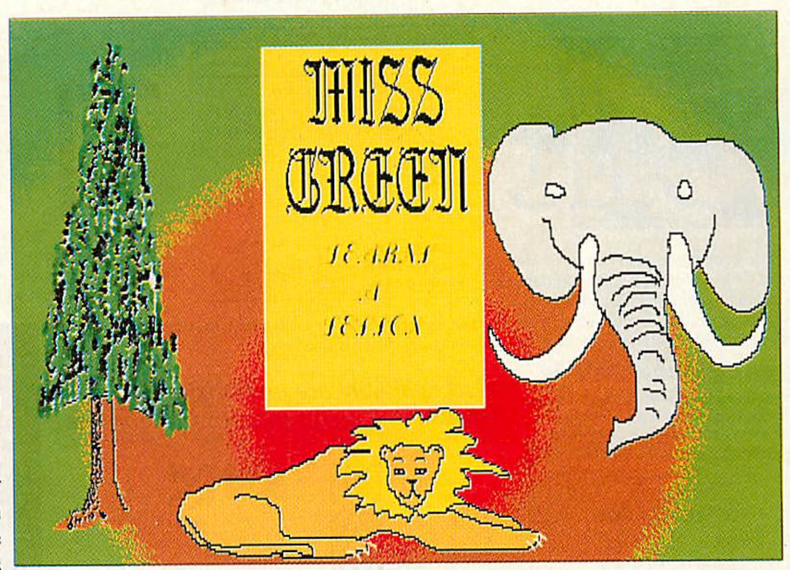
Most of the entries were on *Impression Junior*, although there were some *Pendown* entries. As both programs feature a powerful spelling checker, it was some surprise that most of the booklets contained at least one mis-spelt word.

One of the other areas we were judging was punctuation, and that too was generally less than satisfactory.

The use of the apostrophe was clearly not understood – several using it to pluralise words and the accent (key on the top left of the keyboard) was often used instead of the apostrophe.

The quality of drawing however was excellent. Most used the correct type of drawing or painting program for the given illustration and it was clear that a lot of effort had gone into this area.

Thanks to Claire Foxley and to her partner Ralph Biden who, along with Mark Moxon and myself had the job of judging the entries.




Winning Ways with Miss Green

## Under 11s

**Winner**: Sarah Gibbs, Oatlands Junior School, Harrogate for *'Miss Green Learns a Lesson'*.

This included excellent illustrations, particularly when you consider they were done with a mouse and the typography was pleasing with careful use of colour. Overall, this was an excellent story which really appealed.

**Runner up**: Thomas Fraser and Jonathan Hui, Manston Primary School for *'A Road Safety Code for Children'*.

It was quite an achievement for nine-year olds to create this in *Draw*. We liked the way one page was left uncoloured so that the reader could colour it in and the simplicity of some of the pages really helped get the message across.

## 11-14

**Winner**: Six great kids from Grove Road County Primary School, Harrogate for *'Welcome to Harrogate'*.

Beautifully balanced, simple but effective use of colour and symbolic use of illustrations. They must have worked very hard to create it in this way using *Draw*.

**Runner up**: Hannah Bradley, Oatlands Junior School, Harrogate for *'The Story of Freddie'*.

This included beautiful colour illustrations, with the cover being the most attractive picture we've seen in this category.

There was also a nice use of graduated tints in the booklet, the poem was great and the topical story well written

## 15-18

**Winner**: Matthew Verrill and Nicola Churchill, Raincliffe School for *'Build a Hovercraft Competition'*.

This included good graphics - one of the few entries to include a graph generated in Graphbox – an interesting factual story and a well-designed cover that showed good use of drop shadows with fonts.

**Runner up**: Jamie Dobson, City of Leeds High School for *'A Guide for Keeping Pet Mice'*.

Jamie has only been using computers for about a year but despite this he showed a good use of illustrations. Although there were some errors in the text, Jamie put a lot of effort into this work.

## Commended entries

- Chris Barrett, Benton Park School, Leeds (11-14) for *'The Opt Out Issue'*. A very complex and professional standard of architectural drawing.
- Rachael Hartley and Maura Fennelly, St Michael's College, Leeds for *'Winter Days'*. Fun illustrations.
- Charles Woffinden and David Matthews, Oatlands Junior School, Harrogate for *'The Creature from the Polluted Lagoon'*. A great use of fonts on the cover and an extremely entertaining story.

## Next year

I recognise that several schools found the time schedule far too tight, and to those I apologise. Next year we will make the competition nationwide and start it earlier.

Given that we will have more time to plan, I will endeavour to devise projects which will relate to the appropriate areas of the National Curriculum. Suggestions will be welcome, as will offers of help.

Thanks to everyone who took part and congratulations to the winners the runners up.

**Geoff Preston**


This looks like an unexpanded A3000...

# Risky business

Mark Moxon advises would-be Acorn purchasers how to pick up a bargain on the second-hand market – and how to avoid buying a turkey

It's that time again when Acorn releases a new machine, and the second-hand market really takes off as people sell their old machines to upgrade to a spanking new Risc PC.

Of course, there are a lot of people out there who don't want or need the power of the new Risc PC, and for these users there will be plenty of bargains to be had over the coming months.

## The choice

Before jumping headfirst into the Free Ads section, decide on what you are after, and what you plan to use your Acorn for. If you already own an Acorn, then you'll probably have a pretty good idea of what you are after, but if you're looking for an introduction to computing, you'll need to think before you buy.

Each Acorn machine has its pros and cons, so let's quickly run through each model.

A305, A310, A440 – The first Acorn 32-bit machines. Rather outdated and expensive to upgrade, but you can get hold of an A310 with an Arm3, 4Mb of Ram and a hard disc, for a good price. The disc drive isn't as reliable as on later models, and with machines this old it's wise to see the machine actually working, if possible.

The original A440 had a 20Mb hard drive fitted, which is very small by today's standards, so don't think you'll never need to buy a hard disc if you get an A440. The chances are that the owner will have upgraded the hard disc in the machine, probably to a bigger IDE drive.

Finally, make sure that the machine is fitted with Risc OS 3, unless you want to fork out another £80 to upgrade.

A410/1, A420/1, A440/1 – In my opinon, one of the best machines Acorn has ever made. The A400 series is robust, easily expandable and well-priced. You can easily fit 4Mb of Ram (by just plugging in the cheap Ram chips needed), a hard disc (by adding an old ST506 drive immediately, or by adding an IDE interface), an Arm3 (by just removing the old Arm2 and literally plugging an Arm3 upgrade board) and Risc OS 3 to provide a powerful machine.

The keyboard is well-made – much better than the A5000's keyboard as far as I'm concerned – and the hardware is reliable. Almost every second-hand A400/1 will be fitted with a hard disc, but the very minimum you should go for is 40Mb: 20Mb is far too small these days.

A540 – Used to be the top of the Archimedes range. Its advantages are that it is the only pre-Risc PC Acorn that can be expanded to 16Mb of Ram – at a cost – and it contains a large 120Mb SCSI drive, but unless the price is very competitive, you'd be better looking at a newer machine such as an A5000. The promise shown by the plug-in processor card has not been realised, as there are no alternative boards to plug in (except the Floating Point Accelerator co-processor upgrade).

A3000 – Very cost-effective, but unfortunately a little hard to expand. One key advantage of the A3000 over the new A3010 is that you can fit an Arm3 to speed things up – the A3010 includes the Arm250 chip which can't be replaced.

Apart from that the only real advantage of the A3010 over the A3000 is that the A3010 contains a high density disc drive, but if you don't need to use high density discs, that's not a problem.

The A3000 can be upgraded to A5000 specifications by the Greyhound upgrade kit. Another point in favour of the A3000 is the large expansion bus on the back, onto which you can bolt an expansion box to take full-size expansion cards.

A5000 – Expect prices of the A5000 to tumble as the Risc PC aims squarely at the same price range. An excellent computer, but do make sure that it has been upgraded to Risc OS 3.1 from Risc OS 3.00: the latter operating system is too bug-ridden to be useful.

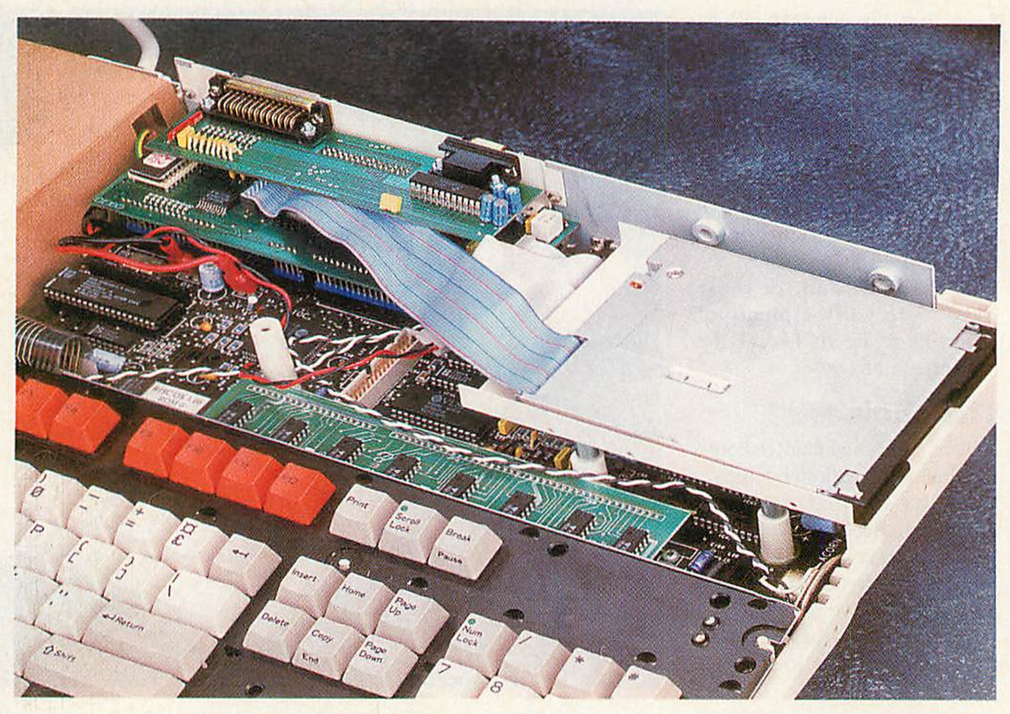
The key advantages of the A5000 over older machines are a high-density floppy drive, a built-in IDE hard disc and interface, a bi-directional printer port and the ability to drive SVGA monitors directly.

Personally I find the keyboard a little plasticky, but it's sufficient.

A3010, A3020, A4000 – Buying one of these will at least mean you own a model which is still being manufactured and sold, but if you intend to expand your machine, you would be advised to think carefully.

The processor in the A3010 – the Arm250 – can't be changed, though the speed of the machine can be increased by adding a Turbo Ram upgrade from Simtec. Also there is only room for one mini-expansion podule, which seriously limits the capacity for enhancing your machine, and there is no expansion slot, as on the A3000.

If you intend to play a lot of games then the A3010 is a good buy as it contains two joystick ports – no other Acorn machine has these ports. The A3020 and A4000 have a built-in hard disc, which really adds to the usefulness without taking up the expansion slot.



... but look inside and it's been expanded to A5000 specification

## What to look for

When scanning the Free Ads, there are a number of important points to look out for. The first, and probably the most overlooked, is to make sure that Risc OS 3.1 is fitted.

Although Risc OS 2 machines are perfectly usable, you will eventually be forced to upgrade as more and more programs are written for the new system.

Many applications are appearing which simply do not run under Risc OS 2, and a lot of those which do run will have certain features disabled under the old OS. If you buy a Risc OS 2 machine, bear in mind that a Risc OS 3 upgrade now costs £80.

Another important point is the speed of the machine. An Arm3 is regarded as a vital upgrade to your machine, and if you feel you will need speed, don't consider an A3010, A3020 or A4000: they can't be upgraded to an Arm3.

Arm3 upgrades cost around the £100 mark, though the A3000 has to be upgraded by a dealer, which will add to the cost.

Most computers sold through our Free Ads section are sold as complete systems, consisting of the computer, a monitor, possibly a printer, and almost certainly some software.

It is vital to make sure that you get the right monitor if possible, and again this choice depends on what you want to use the computer for. If you intend to concentrate on games, then a standard Acorn monitor (or equivalent) is perfectly acceptable, and the A3010 can even work with a domestic TV.

However, if you intend to use your machine for more serious work, such as DTP, graphics or business, then make sure you get a multisync monitor (also known as a multiscan).

These enable you to display higher resolution modes, but do check that the particular monitor on offer can display low resolution modes, otherwise you won't be able to play most games.

The software sold with most second-hand machines can prove to be a real goldmine, but there is an interesting legal point here. Software is sold subject to certain conditions, and with a lot of packages, what you are actually buying is the *right* to use that package, rather than the actual package itself.

You can't sell on this right, so technically speaking you can't sell the software. On the other hand, no-one seems to be that bothered, and when you buy a second-hand machine the chances are that you've broken the conditions somewhere.

Another problem is that if the package is registered, then you won't be able to re-register the package in your name, so upgrades and bug fixes will be hard to obtain.

If you see unopened software for sale – usually unwanted gifts and such like – then you'll be able to register the software yourself and you won't be breaking any laws.

Some of the best deals can be found when the software is effectively thrown in free, so do check what's on offer.

## Pricing

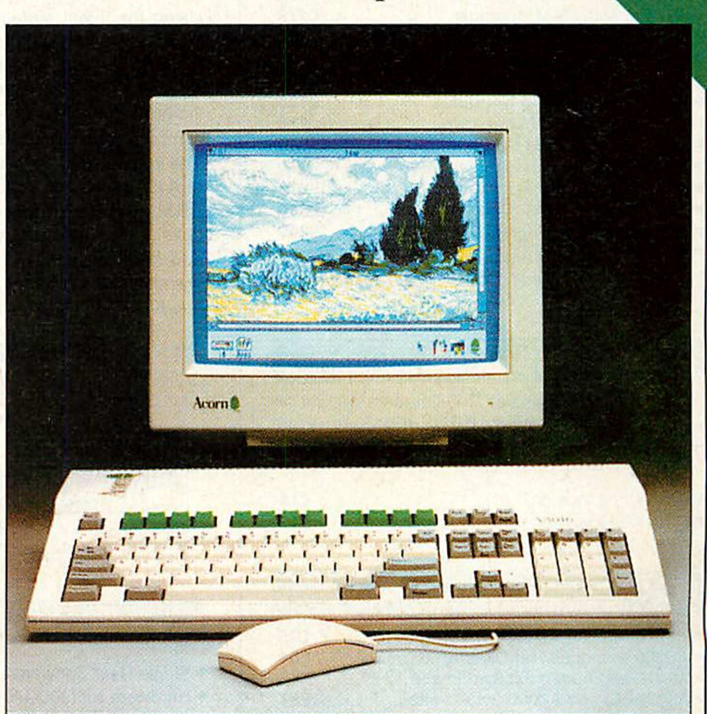
Finally, what about pricing? Although it's extremely hard to fix certain prices on certain machines – especially now the Risc PC has arrived – we've compiled a quick guide to what you can expect to pay for a second-hand machine. These are based on the re-sell prices of reconditioned machines, which normally come with some kind of guarantee, so prices in the Free Ads market could be slightly lower.

Bear in mind, also, that machines in bad condition should be priced lower, but then again you won't tend to find adverts proclaiming that the machine is well-used. Again, the only advice is to try before you buy.

Good luck with your bargain hunting, and if you have a Free Ad you wish to place fill in the coupon available on page 82, and we'll publish it for you.

### Typical second-hand prices

| | | |
|---|---|---|
| A310 | (1Mb Ram, no HD, Arm2) | £140 |
| A440 | (4Mb Ram, 20Mb, Arm2) | £400 |
| A410/1 | (1Mb Ram, no HD, Arm2) | £400 |
| A420/1 | (2Mb Ram, 20Mb HD, Arm2) | £430 |
| A440/1 | (4Mb Ram, 40Mb HD, Arm2) | £520 |
| A3000 | (1Mb Ram, no HD, Arm2) | £250 |
| A3010 | (1Mb Ram, no HD, Arm250) | £280 |
| A4000 | (2Mb Ram, 80Mb HD, Arm250) | £500 |
| A5000 | (4Mb Ram, 80Mb HD, Arm3) | £700 |
| Standard colour monitor | | £110 |
| Taxan multisync monitor | | £200 |
| AKF18 multisync monitor | | £160 |


Acorn

## I/O Expansion Cards

- A3000 User Port/MIDI card £44
- A3000 Analogue/User card £35
- I/O Podule - User/Ana/1MHz £79
- Archi Analogue/User card £55

## Disc Controllers

- Floppy Disc Interface £21
- Backplate/Lead for above £12
- 8-bit SCSI card £120
- 16-bit SCSI card £149
- 16-bit SCSI card – Acorn £249
- ST506 Hard Disc podule £69

## Ultimate Expansion

- Ultimate Expansion – A5000 £39
- Ultimate Expansion – A3000 £39
- Ultimate Expansion – A3010 £41
- Ultimate Expansion – A3020 £38
- SCSI uPodule £69
- Vision Digitiser uPodule £79
- Analogue uPodule £29
- Serial Port uPodule £49
- MIDI uPodule £49
- Scanlight 256 uPodule £229
- PSU Kit for Ultimate Exp. £30

*(please call for pricing of above cards with IDE hard drives fitted)*

## Graphics Cards

- Colour Card Gold £239
- Mono Real-time Digitiser £75
- Chroma 500 Genlock card £419
- Chroma 150 PAL Encoder £169
- Chroma Genlock card £209
- Hawk V8 MKII Digitiser £189
- Eagle M2 Multimedia card £275
- HiVision Colour Digitiser £149

## Scanners

- Spectra Colour Handscanner £549
- Scanlight 256 – A300/400 £188
- Scanlight 256 – A3000 £198
- Scanlight Professional £549
- Scanlight Video 256 £199

## Networking

- Ethernet card – A300/400 £139
- Ethernet card – A3000 £189
- Econet Module – A300/400 £49
- Econet Module – A3020 £49
- Econet Module – A4 £49
- Ethernet III card £149
- Acorn Access – A3000 £145
- Acorn Access – A3020 £145
- Acorn Access – A5000 £145
- AUN/Level 4 Fileserver £389
- TCP/IP Protocol suite £399

## Miscellaneous Add-ons

- Floating Point Accelerator £99
- 386 1Mb PC Card – A3020 £225
- 486 4Mb PC Card – A3020 £420
- MIDI Expansion card £65
- MEMC1A Upgrade £29
- 4 Podule Backplane £25
- Fan for Backplane £10
- PowerPad Single joypad £25
- PowerPad Dual joypad £34




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Now everyone can afford an Acorn computer system, hard drive, monitor, printer, etc., with Watford Electronics 12, 24 or 36 months credit facilities. Telephone for details.

## LaserDirect Printers

Print at high speed up to 600dpi resolution with Computer Concepts' LaserDirect printers.

- LaserDirect HiRes 4ppm £799
- LaserDirect HiRes 8ppm £1099
- LaserDirect card for LBP4+ £379

## Archi Accessories

- A3000 Keyboard Dustcover £5
- A3000 Combined Dustcover £9
- A3010 Keyboard Dustcover £5
- A300/400 Dustcover £9
- Archi Keyboard only Dustcover £5
- A5000 Dustcover £9
- 14" Monitor Dustcover £6
- Perspex Keyboard Cover £8
- A3000 Monitor Stand (Acorn) £29
- A3000 Monitor Stand (WE) £15
- A3000 Podule Case £15
- A3000 Carry Case £10
- A4 Notebook Carry Case £35
- A4 Notebook Battery Pack £49
- A4 Notebook Mains Adaptor £69
- Archi Keyboard Extension Lead £8
- Replacement Mouse (Acorn) £39
- Archi MK4 Replacement Mouse £29
- Quest Tracerball £26
- Mouse Port Splitter £10
- Voltmace Delta Cat Joystick £25

## Concept Keyboards

- A4 Standard keyboard £89
- A3 Standard keyboard £95
- A4 Primary keyboard £94
- A3 Primary keyboard £99
- A4 Designer keyboard £104
- A3 Designer keyboard £104
- Universal 2010 keyboard A4 £104
- Universal 2010 keyboard A3 £107
- User Port cable for 2010 keyboard £9
- Arc Serial cable for 2010 keyboard £9
- Concept Designer software £22

## Archi Cordless Mouse

No more tangled mouse cables when you use the Archi Cordless Mouse.

- High resolution 200dpi
- Auto standby mode after 5 secs.
- Auto power off after 20 minutes.

**£26**

## Scan256 Handscanner

If you need a 256 grey scale hand scanner for your Archimedes then look no further.

Scan256 gives you up to 256 grey levels at a maximum resolution of 400dpi and is supported by state-of-the-art software. This makes it the only sensible scanning and image processing solution for the Acorn 32-bit range of machines.

Features include:

- More than one copy of an image in memory at once.
- Advanced image processing tools.
- Convolution digital filtering with over 100 filters.
- Adjustable scale & size during scan
- Save images in industry standard formats
- True brightness, contrast and gamma controls
- Selectable scanning modes
- 105mm scanning width
- Ability to shear and rotate the image

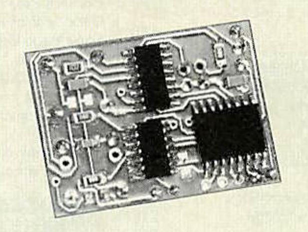
**only £159**

- Scan256 for A3000 (external) £169

*(ring for availability)*

Note: Scan256 is not suitable for A3010/A3020 or A4000 computers.

## VIDC Enhancer



The Watford VIDC Enhancer for the Archimedes 300/400 and A3000 computers, caters for all types of Multiscan and VGA monitors.

A disc of utilities is supplied to allow you to define your own modes, and change existing ones. A desktop mode selector is also supplied

- Multiscan VIDC Enhancer £19
- SuperVGA VIDC Enhancer £35
- 9 to 15 pin VGA Adaptor £12

## Archi Hand Scanner

Watford's MKII hand scanner for the Archimedes and A3000 has a maximum resolution of 400dpi, and a scan width of 4". The software is supplied on ROM, so there are no discs to load. Features include: cropping and scaling images, X flip and Y flip, and edge detection allows you to transform solid images into outlines.

- A300/400/A5000 version £89
- A3000 external version £109
- v1.10 ROM Upgrade £20

## Archi A4 Scanner




The 216mm scanning width can cope with both desktop scanning of single sheets, photographs, etc, with its detachable sheet feeder, or used as an A4 wide hand scanner. 64 grey levels are produced from the scanner at resolutions up to 400dpi. The software included on ROM allows you to adjust contrast and brightness of the scanned image, rotate, shear and cut out sections of the image. The scanner uses a green light source which gives improved contrast on images over conventional red light scanners.

- A4 Scanner for A300/A400 £189
- A4 Scanner for A3000 £229
- Sheet Feeder for A4 Scanner £69

## Archimedes Spares

- Cased Archimedes Keyboard £99
- A3000 Replacement Keyboard £35
- A300/A400 Power Supply £79
- A3000 Power Supply £59
- Fan Filter £4
- A5000 3.5" Floppy Drive £69
- A3000/A400 3.5" Floppy Drive £59
- IOC, VIDC or MEMC £39

## Multimedia & CD-ROM

### Cumana CD-ROM Drives

Enter the world of Multimedia on the Arc with the Cumana range of CD-ROM drives and accessories.

**300 Series - low cost drive**

- 300 CD-ROM Drive/Interface £339
- 300 CD-ROM Pack 1 £424
- 300 CD-ROM Pack 2 £509
- 300 SLCD Interface only £89

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- 600 CD-ROM Drive only £424
- 600 CD-ROM Drive/Interface £509
- 600 CD-ROM Pack 3 £594
- 600 CD-ROM Pack 4 £680

*(CD-ROM Packs include Drive, Interface, Cables, Stereo Speakers and a selection of CD titles)*

### 6 Disc CD ROM Drive

A new quad speed CD ROM Drive with 6 disc cartridge and autochanger.

**only £999**

### Acorn Multimedia Expansion

The ideal CD-ROM expansion system for the Archimedes. Styled to match the A4000 and A5000 this unit will fit neatly on top.

- Multimedia Expansion £485
- Multimedia Expansion – 16 bit £585
- Multimedia Expansion – 8 bit £585

**Special Discounts**

available when purchased with a computer system.

Call 0582 746555 for details

### CD Accessories

- Spare CD Caddy £5
- Stereo HiFi Speakers £29

### CD ROM Software

| | |
|---|---|
| Artworks | £165 |
| Artworks Clip Art | £19 |
| British Birds | £150 |
| CD – 4 Disc Set | £149 |
| CD Francais | £120 |
| Creepy Crawlies | £90 |
| Dictionary of Living World | £175 |
| Dinosaurs | £124 |
| Grooves | £90 |
| Hutchinson Encyclopaedia | £99 |
| Illustrated Holy Bible | £23 |
| Illustrated Shakespeare | £23 |
| Image Warehouse | £53 |
| Revelation II | £98 |
| Sherlock Holmes | £23 |
| Space Encyclopaedia | £57 |
| Really Useful CD v1 | £47 |
| Really Useful CD v2 | £47 |
| Times & Sunday Times | £195 |
| Woodland | £144 |
| Pro Artisan v2 | £ |

# ARCHIMEDES SOFTWARE

**Below are listed the more popular software titles for the Archimedes, if you cannot see the title that you require, please call for price and availability.**

## Educational

- 10 out of 10 Early Essentials £18
- 10 out of 10 Junior Essentials £18
- 10 out of 10 Maths - Number £18
- 10 out of 10 Maths - Algebra £18
- 10 out of 10 Maths - Statistics £18
- 10 out of 10 English £18
- 10 out of 10 French £18
- 10 out of 10 Dinosaurs £18
- 10 out of 10 Driving Test £18
- Advantage £32
- Animal Rescue £22
- Animated Alphabet £18
- Animated Numbers £18
- An Eye for Spelling £31
- Arcventure I – Romans £24
- Arcventure II – Egyptians £24
- Arcventure III – Vikings £24
- Around the World in 80 Days £TBA
- Aztecs £37
- Badger Trails £34
- Best Four Adventure £34
- Best Four Language £34
- Best Four Maths £34
- Body £17
- Bookbinder £43
- Bookstore – Primary £35
- Bookstore –Secondary £52
- Britain since 1930 £26
- Bumper Disc 1 £14
- Bumper Disc 2 £14
- Circus £14
- Concept Keyboard Designer £22
- Connections £27
- Concept Kids £21
- Converta Key £9
- Crystal Rain Forest £34
- Desktop Stories £35
- Dream Time £19
- Export, Trade and Industry £34
- First Page £39
- First Logo £20
- Farm (5-7 years) £18
- Fleet Street Phantom £22
- Food for Thought £17
- Fun School 3 Blue (under 5) £17
- Fun School 3 Red (5-7 years) £17
- Fun School 3 Green (over 7) £17
- Fun School 4 Red (under 5) £17
- Fun School 4 Green (5-7 yrs) £17
- Fun School 4 Blue (over 7) £17
- Geordie Racer £24
- Glimpse £8
- Graph IT £17
- Granny's Garden £TBA
- Hilighter £30
- Insight £68
- Investigating Maths £34
- Jigsaw £18
- Landmarks – Aztec £17
- Landmarks – Civil War £17
- Landmarks – Columbus £17
- Landmarks – Egypt £17
- Landmarks – Elizabeth I £17
- Landmarks – Rainforest £17
- Landmarks – Tudors & Stuarts £17
- Landmarks – Victorians £17
- Landmarks – World War II £17
- Linkword – French £32
- Linkword – German £32
- Linkword – Spanish £32
- Magpie £58
- Making of the UK £35
- Mapping Skills £25
- Mapventure £22
- Medieval Realms £35
- Microbugs £24
- Nature Park Adventure £24
- Naughty Stories vol.I £48
- Naughty Stories vol.2 £48
- Numerator £33
- Picture Book £14
- Podd £23
- Recall £36
- Seelinks – Ourselves £26
- Seelinks – Pondwatch £34
- Seelinks – Tourism £54
- Seelinks – Transport £34
- Selladore Tales £23
- Settlement £30
- Snippet £31
- Space Mission Mada £22
- Splash £18
- Stig of the Dump £21
- Story Starts £24
- Talking Pendown £59
- Teachers Cupboard £24
- Teddy Bears Picnic £22
- Topographer £62
- Victorians £19
- Viewpoints £33
- Wizards Revenge £16
- World Maker £46
- World Map Study £59
- Worst Witch £21

## Games

- Adventures of Sylvia Lane £19
- Air Supremacy £13
- Apocalypse £14
- Arcade 3 Compilation £11
- Battle Chess £21
- **Birds of War £25**
- Black Angel £23
- Boogie Buggie £14
- Break 147 & Superpool £24
- Bug Hunter in Space £9
- **Carnage Inc. £20**
- Cataclysm £15
- Champions Compilation £21
- Chess 3D £14
- Chocks Away Compendium £26
- Chocks Away Extra Missions £12
- Chopper Force £18
- **Crystal Maze £29**
- Cyber Chess £25
- Cycloids £17
- Demons Lair £18
- **Dungeon £24**
- Ego Repton 4 £17
- Elite £31
- Enter the Realm £17
- E-Type Compendium £17
- E-Type Extra 100 Miles £12
- Fervour £18
- **F.R.E.D. £17**
- Galactic Dan £14
- Games Wizard £17
- Gods £18
- Grevious Bodily Arm £14
- **Haunted House £20**
- Heimdall £24
- Hero Quest £21
- Holed Out Compendium £12
- Interdictor 2 £22
- Ixion £22
- Jahangir Khan Squash £19
- James Pond £18
- **James Pond 2 - Robocod £21**
- Lemmings £18
- **Lemmings 2 - Tribes £24**
- Lotus Turbo Challenge II £18
- Mad Professor Mariati £14
- Magic Pockets £22
- Master Break £13
- Man at Arms £14
- Manchester Utd in Europe £18
- Nebulus £18
- Oh No! More Lemmings £14
- Omar Sharif's Bridge £18
- Pandora's Box £17
- Pipe Mania £15
- Play It Again Sam 1 £17
- Play It Again Sam 2 £17
- Play It Again Sam 3 £17
- Populous £21
- Powerband £14
- Powermonger £24
- Quark £19
- Quazar £10
- Real McCoy 2 £21
- Real McCoy 3 £21
- Real McCoy 4 £21
- Return to Doom £16
- Repton 3 £14
- **Saloon Cars Deluxe £24**
- Sensible Soccer £22
- **Sim City £21**
- Simon the Sorcerer £32
- **Stunt Racer 2000 £24**
- SWIV £18
- **Sylvia Lane £18**
- Striker £17
- Technodream £18
- The Last Ninja £18
- Twin World £13
- **Virtual Golf £24**
- Warlocks £24
- Worldscape £16
- White Magic 2 £15
- **Xenon 2 £20**
- **Zool £18**

## Miscellaneous

- AUN/Level4 Fileserver £369
- TCP/IP Protocol Suite £199
- Speech! £17
- Investigator 3 £49
- MultiFS £29
- DFS Reader £5
- Arcticulate £18
- Audio Works £45
- Compression £38
- Gerbox Plot £54
- Hard Disc Compression v2 £38
- Oak Logic £69
- Ancestry £58
- RISC OS SID Utilities Discs £10
- RISC OS Upgrade – TV Digitiser £25

## DTP

- Impression Junior £63
- Impression II £105
- Impression Borders Disc £12
- Impression Business Sup. £38
- **Impression Style £79**
- Impression Publisher £135
- Impression Publisher OPI £223
- Ovation £82
- Desktop Thesaurus £16
- Equasor £36
- Show Page £139
- Spellmaster £42
- Sleuth OCR £40
- Type Studio £37
- Optical OCR £TBA

## Word Processors

- DeskEdit 3 £24
- Data Word £14
- Easiwriter II £114
- Easiword Plus £42
- Pendown £45
- Pendown Plus £67
- Primeword £50
- **Wordz £84**

## Spreadsheets

- Eureka £95
- ProSheet £39
- **Resultz £105**
- Schema £89

## Databases

- DataVision £66
- Flexifile £68
- Genesis Project £49
- Genesis Professional £119
- Knowledge Organiser £75
- Masterfile III £45
- Multistore v2.01 £99
- Pinpoint v2 £63
- Pinpoint Junior £23
- Recordz £TBA
- S-Base Developer £139
- S-Base Personal £69

## Integrated

- **Acorn Advance £85**
- Desktop Office £69
- Pipedream 3 £55
- Pipedream 4 £93
- Fireworkz £129

## Languages

- Acorn Desktop Assembler £118
- Acorn Desktop C £179
- Acorn PC Soft £89
- Control Logo £20
- **Easy C £45**
- Logotron Logo £45
- RiscBASIC Compiler v3.0 £66
- RiscFORTH Compiler £66
- Robo Logo v1.1 £37

## Site Licences

- Advance Primary Licence £181
- Advance Secondary Licence £440
- Artworks £540
- Impression Style £435
- Impression II £542
- Ovation DTP £475
- Pinpoint £379
- Pipedream 4 £695
- S-Base £399



**Watford Electronics offer you the best selection of software for the Archimedes, and the best prices around. Make us your first and only choice.**

## Graphics

- Artisan 2 £42
- Autosketch II £65
- ArcTist £14
- Atelier £59
- Artworks £105
- Chartwell £24
- Craftshop 1 £18
- Craftshop 2 £18
- Euclid 2 £59
- Film Maker v5.1 £55
- GraphBox £54
- GraphBox Professional £102
- Illusionist £68
- Image Animator £65
- **Kid Pix £34**
- Plot £66
- Poster £74
- Presenter GTI £65
- PrimeArt £46
- **Pro Artisan 2 £99**
- Render Bender II £89
- Rephorm £49
- Revelation II £74
- Revelation Image Pro £125
- Solida Render v5.1 £75
- Titler £114

## CAD

- Arc PCB v1.7 £79
- Arc PCB Professional v3.2 £169
- Arc PCB Schematics v5.1 £229
- CADet £125
- SolidCAD v5.1 £65
- SolidTools v5.1 £169
- PowerRouter £129
- Excellon Drill £53
- Oak Parametric Design Tool £149
- WordCAD £69

## Business

- Business Accounts System £275
- Business Accounts Modules £85
- Payroll Manager v2.0 £66
- Prophet Accounts £131
- Home Accounts £33
- Financial Accountant £225
- Shareholder Professional £195
- Micro Trader System £275
- Micro Trader Modules £75
- PlanING £95
- ProjectING £295

## Communications

- ArcComm 2 £38
- ArcTerm 7 £64
- Hearsay II £76
- ArcFax £25

## Music

- Rhapsody 2 £45
- Rhapsody 3 £78
- Notelle £57
- Armadeus £55
- Vox Box £45
- Score Draw £45

## Home Office

Includes Pipedream 4, PC Emulator with DR DOS v6, Datapower database software and some demonstration versions of popular software packages. **£85**

## Learning Curve

Includes Acorn Advance, PC Emulator with DR DOS v6, together with some demonstration versions of popular software packages. **£42**

## Printer Drivers

- Expression PS £19
- Citizen Colour Driver - OS 2 £15
- Deskjet 500C/550C Driver £15
- Epson JX Printer Driver £15
- Star Colour Driver - OS 2 £15
- TurboDriver - Canon BJ £39
- TurboDriver - Epson Stylus £39
- TurboDriver - HP £39
- Repro £49

## Fonts

- RISC User Font Pack 1 £10
- RISC User Font Pack 2 £10
- RISC User Font Pack 3 £10

## Books

- !Help 3 - RISC OS 3 £10
- !Help - Draw £16
- Archimedes Assembly Lang. £15
- Archimedes Operating Syst. £15
- A3000 Technical Manual £29
- A5000 Technical Manual £65
- A3010/A4000 Technical Manual £30
- A540 Technical Manual £65
- A4 Technical Manual £65
- A4 Portable Handbook £7
- A4 Welcome Guide £10
- Ansi C Rel.4 User Guide £25
- Acorn to PC £5
- **Artworks Made Easy £15**
- Archi Games Maker Manual £15
- ARM Technical Data Manual £10
- BBC BASIC Reference Guide £20
- Budget DTP on the Arc £13
- Beginners Guide to Wimp Prog. £13
- Basic Wimp Programming £15
- C: Dabhand Guide 3rd Ed. £17
- C Programming Language £27
- Control on the Archimedes £10
- First Impressions £28
- File Handling for All £10
- First Steps in Prog. RISC OS £15
- Good Impressions £25
- Graphics on the Arm £15
- Impression II - Dabhand Guide £15
- Mastering 1st Word Plus £14
- RISC OS Style Guide £10
- RISC OS 2 Prog. Ref. Man. £79
- RISC OS 3 Prog. Ref. Man. £99
- RISC OS 3 Apps/User Gd. £20
- **RISC OS 3 First Steps £15**
- Wimp Prog. for All £13

## ACORN TO PC

**Unravel the difference between DBC O3 and DC8 with this easy to understand guide**

**Only £7.50**

## SOFTWARE OFFERS

- Acorn DTP £20
- 1st Word Plus £15
- Lemmings £10
- Quest for Gold (HD) £5
- Pacmania £9
- Genesis £15

## The Bestsellers

***Impression Style £79***
'The most sophisticated DTP package available for under £100.'

***Artworks £105***
'The best graphics manipulation package available.'

***Acorn Advance £85***
'The ultimate integrated package that really works for you.'

***TurboDrivers £39***
'Excellent quality printouts at faster than normal speeds.'

***Prophet Accounts £131***
'A comprehensive business accounts package.'

## Software Bundles

- **Arcventure £65**
  Romans, Egyptians, Vikings
- **Linkword £87**
  French, German, Spanish
- **Lemmings & £27**
  Oh No! More Lemmings
- **Crystal Maze & £44**
  Games Wizard
- **Artworks & £119**
  Clip Art CD
- **Impression II & £130**
  Business Supplement
- **PC Emulator & £155**
  Acorn Advance
- **Ovation & Thesaurus £69**

**Sales Hotline**
**0582 745555**

## Laser Printers

All Laser printers (excluding HP Lasers) include 12 Months On-Site maintenance

| | | |
|---|---|---|
| Brother HL6 | 6ppm | £422 |
| Brother HL6V | 6ppm | £465 |
| Canon LBP4+ 1.5M RAM | 4ppm | £635 |
| Canon LBP4U | 4ppm | £485 |
| Canon LBP-8 Plus IIIR | 8ppm | £1559 |
| Canon LBP-8 IV 600DPI | 8ppm | £925 |
| Epson EPL5000 | 6ppm | £433 |
| Epson EPL-5200 | 6ppm | £483 |
| Epson EPL-7500 PS | 6ppm | £1135 |
| HP Laserjet 4 ML | 4ppm | £745 |
| HP Laserjet 4 | 8ppm | £960 |
| HP Laserjet 4L | 4ppm | £469 |
| HP Laserjet 4M | 8ppm | £1286 |
| HP Laserjet 4P | 4ppm | £717 |
| HP Laserjet 4MP | 4ppm | £979 |
| HP Laserjet 4Si | 16ppm | £2175 |
| HP Laserjet 4SiMX | 16ppm | £3260 |
| NEC 610 Super Script | 6ppm | £422 |
| NEC Silentwriter S102 | 6ppm | £914 |
| NEC Silentwriter S102P PS | 6ppm | £1284 |
| OKI OL400EX | 4ppm | £385 |
| OKI OL410EX | 4ppm | £523 |
| OKI OL 830PS | 8ppm | £799 |
| Panasonic KX-P4400 | 4ppm | £360 |
| Panasonic KX-P4410 | 5ppm* | £424 |
| Panasonic KX-P4430 | 5ppm* | £530 |
| Panasonic KX-P4440 | 10ppm* | £779 |
| Panasonic KX-P5400 PS | 4ppm | £599 |
| Star LS-5 | 5ppm | £442 |
| Star LS-5 EX (RISC Based) | 5ppm | £510 |
| Star LS-5 TT True Type+Mac | 5ppm | £732 |

*2 years on-site warranty

### Laser Toners

| | | | |
|---|---|---|---|
| Canon 2, 3 & 4 | £52 | KX-P4400/5400 | £12 |
| Canon LBP4U | £52 | KX-P4450/50i/55 | £19 |
| Canon 8/Star LP8 | £52 | KX-P4410/20/30 | £29 |
| Canon LBP8-IV | £65 | NEC 290 | £78 |
| Epson GQ | £14 | NEC S60/60P/62P | £89 |
| EPL 40/41/4300 | £63 | OKI OL400/800 | £19 |
| EPL 5200 | £85 | OKI OL400e | £17 |
| EPL 71/7500 | £117 | Star LP4 | £48 |
| HPII/D, III/D | £52 | Star LS5 | £63 |
| HP IIP, IIIP | £76 | VM800 8K pages | £99 |
| HP4/4M | £70 | Qume Crystal(3) | £99 |
| HP Laserjet 4L | £45 | | |

### Laser RAM Upgrades

| Type | 1M | 2M | 4M | 8M |
|---|---|---|---|---|
| HPIIP; III/P/D | £54 | £90 | £132 | |
| HPII & IID | £65 | £110 | £175 | |
| HPIIIsi | £63 | £85 | £158 | £299 |
| LJ4/4L//4M | £65 | £85 | £150 | £299 |
| EPL40/41/4300 | £70 | £110 | £205 | |
| EPL 50/5200 | £58 | £115 | £215 | |
| KX4410/30 | £70 | £110 | £199 | |
| KX4420/50i | £65 | £89 | £149 | |
| KX4400 | £89 | £129 | £239 | |

### Jetpage Postscript Cartridge

- HP IIP/IIIP £225 • IID & III £227

### Various Add-Ons

- HP Premier Font Collection £19
- Laserjet Various Font C'tridges from £45
- HP Postscript Module for LJ4 £270
- Laserjet 4 Powered envelope feeder £199
- Jetdirect Ethernet Card for Laserjet IIIsi/4/4Si £339
- 500 Sheet paper cassette (3rd Bin) £205
- HPIIP/IIIP Lower Cassette Tray £115
- Canon LBP-4 Lower Cassette Tray £96
- Ozone Filter P4420 £9; P4450/55 £20

# Despite appearances, we offer you very little choice.

At **Watford Electronics**, we will only offer any product when we are convinced that we can sell it at the best price with the right level of support. It's an approach that our thousands of customers appreciate, for we are now celebrating twenty-one years in the business. So as you look through all the lists of items that follow and discover how competitive we are, you'll discover just how little choice you have. **You simply must call us.**



## Panasonic Printers

| | Printer | CSF | Ribbon |
|---|---|---|---|
| KX-P1170 | £91 | £59 | £6 |
| KX-P1624 | £210 | £126 | £8 |
| KX-P1695 | £267 | £126 | £6 |
| KX-P2023 | £122 | £155 | £8 |
| KX-P2123M | £132 | £69 | £7 |
| KX-P2124 | £210 | £89 | £7 |
| KX-P2624 | £255# | £126 | £8 |

#Includes 12 months on-site warranty

- Colour Kit for KX-P2180; KX-P2123 and KX-P2124 £30
- Dustcover for 80 column printers £6
- Serial Interface for above Printers £46
- Black Ribbons for P1081, 1180, 1124 £7
- 32K Buffer for above Printers £16

P.S. Our original Panasonic Ribbons are guaranteed to last 3 million characters.

## Canon Bubblejet Printers

| | Printer | CSF | 2nd Bin | Ink Cart |
|---|---|---|---|---|
| BJ10SX | £154 | £43 | – | £15 |
| BJ200 | £202 | – | – | £16 |
| BJ230 | £276 | – | – | £16 |
| BJ300* | £322 | £88 | £88 | £11 |
| BJ330* | £372 | £92 | £79 | £11 |
| BJC600 | £418 | – | – | £7.50 |
| BJC800 | £1075 | – | – | £16 |

Black Cart. for: BJC600 £6; BJC800 £13

- Optional Battery Pack for BJ10EX/SX £33
- BJ10E/10EX/10SX/200/230 Jumbo Ink Refill pack (twice cartridge volume) £12

* includes 12 months on site warranty

## Citizen Printers

| | | | |
|---|---|---|---|
| 120D+ parallel | £90 | Swift 90C | £122 |
| 120D+ Serial | £109 | Swift 200 | £142 |
| ABC 24pin Mono | £115 | Swift 200C | £156 |
| ABC 24pin Col. | £135 | Swift 240 | £170 |
| Swift 90 | £115 | Swift 240C# | £187 |

2 years warranty on Citizen Printers.

# FREE Windows Printer Driver

- Swift 24 Ribbons: Black £4 Colour £13
- Cut Sheet Feeder for 80 col. printers £75
- Citizen 120D Ribbons £3.50

## Star Printers

| | Printer | CSF | Ribbon |
|---|---|---|---|
| LC15 | £179 | £135 | £5 |
| LC100C | £103 | £65 | £9 |
| LC24-15 Mk2 | £240 | £135 | £5 |
| LC24-20 | £170 | £– | £– |
| LC24-30C | £169 | £– | £– |
| LC24-100 | £130 | £69 | £5 |
| LC24-300C | £224 | £– | £– |
| LC24-20 Mk2 | £173 | £65 | £5 |
| LC24-200C | £200 | £65 | £12 |
| LC200 C | £147 | £65 | £12 |
| SJ144 colour | £345 | £– | £– |
| XB24-200C | £320# | £80 | £12 |
| XB24-250C | £385# | £139 | £12 |

# Includes 12 months on-site warranty

- Black Ribbons for Colour Printers £5
- Serial 8K I'face LC10/15/24/200 £52
- 32K Buffer LC/XB24-10; 15; 200 £52

## Scanners

**AT** – HP-ScanJet IIP £500; IIC £949
**PS/2** – HP-ScanJet IIP £501; IIC £950
HP Auto Doc Feeder IIP £229; IIC £365
HP ScanJet II CX £689

Epson A4 Scanners: Supplied complete with Pic Publisher LE, Omni Direct OCR, Interface card & Cables

| | | | |
|---|---|---|---|
| GTX6500P | £535; | GTX6500S | £599 |
| GTX8000P | £699; | GTX8000S | £760 |

## Epson Printers

| | Printer | CSF | Ribbon |
|---|---|---|---|
| DFX5000C | £1095 | £– | £23 |
| FX870 | £228 | £47 | £4 |
| FX1170 | £284 | £69 | £6 |
| LQ100 | £119 | £– | £4 |
| LQ570+ | £189 | £45 | £4 |
| LQ870 | £335 | £45 | £6 |
| LQ150 Col | £165 | £– | £– |
| LQ1070 | £285 | £69 | £6 |
| LQ1170+ | £404 | – | £10 |
| LQ2550 | £667 | £360 | £6 |
| LX100 | £109 | £– | £4 |
| LX400 | £91 | £69 | £4 |
| LX850+ | £134 | £69 | £4 |
| LX1050 | £174 | £125 | £6 |
| SQ870 | £415 | £170 | £23 |
| SQ1170 | £560 | £155 | £23 |
| Stylus 300 | £178 | £– | £10 |
| Stylus 800 | £185 | £– | £10 |
| Stylus 1000 | £344 | £– | £10 |

### Epson RS232 Interface

Standard £28; +8K Buffer £75

- LQ100 Tractor Feed £29
- FX850/LQ800/850 Tractor Feed £69
- FX/LQ1050 Tractor Feed £85
- LQ2500/2550 Tractor Feed £90
- Dustcovers for 80 col printers £6

## NEC Printers

| | Printer | CSF | Ribbon |
|---|---|---|---|
| P22Q | £134 | £59 | £6 |
| P3Q | £– | £– | £– |
| P32Q | £245 | £79 | £6 |
| P72 | £386 | £115 | £8 |
| P90 | £562 | £115 | £8 |

- Black Ribbons P20; P32 £6
- Ribbons P60/70/P90 Black £8; Colr £14
- P60/70 Colour Option Kit £59
- CSF for P20 £59; P60 £89; P70 £89

## Universal Printer Sharers

Connect up to 4 Micros to 1 printer or 4 Printers to 1 Micro with our combined, Sharer/Changer switch boxes.

### Standard Low Cost Sharers

| Connects | Serial | Parallel |
|---|---|---|
| • 2 to 1 | £8 | £9 |
| • 3 to 1 | £11 | £12 |
| • 4 to 1 | £15 | £16 |

### Professional Sharer Units

| Connects | Serial | Parallel |
|---|---|---|
| • 2 to 1 | £12 | £13 |
| • 3 to 1 | £15 | £17 |
| • 4 to 1 | £24 | £26 |

## Auto Printer Sharer Switch

| Connects | Serial | Centronics |
|---|---|---|
| • 2 to 1 | £27 | £29 |
| • 4 to 1 | £44 | £45 |
| • 8 to 1 | – | £75 |

## 256K Multi Spooler

These Parallel Auto printer sharer switches have built-in 256K Buffer.

- 2 In / 2 out £99 • 4 In / 2 out £115
- 8 In / 1 out £149

(Cables for all printer switches are from £5 each please specify the type required when ordering.)

## Compact Converter Unit

Serial to Parallel & Parallel to Serial £32








**24-Hour Credit Card Order Line**
**0582 74 55 55**

## Hewlett-Packard Printers

| | | | |
|---|---|---|---|
| DJ310 Mono | £167 | DJ1200C PS | £1373 |
| DJ310 Col. Kit | £28 | D-Writer 510 | £189 |
| DJ510 | £189 | D-Writer 500C | £235 |
| DJ500C | £235 | D-Writer 550C | £375 |
| DJ550C | £346 | Paintjet XL300+ | £1630 |
| DJ1200C | £1072 | DJ Portable+CSF | £205 |

+ Includes 12 months on-site warranty

3 years on-site maintenance available as follows:

DeskJet & DeskWriter mono £55
DeskJet & DeskWriter colour £65

- Paintjet Cartridge Black £17; Colour £27
- DJ Portable CSF £49; Carrying Case £49

### Desk Jet 500 Accessories

- Ink Cartridges Black £13; Colour £21
- High Capacity Ink Cartridges Black £20
- Ink refill Double Pack (JetFill) £10
- Ink refill High Capacity (JetFill) £13
- 256K RAM Cartridges 510/500C/550 £49
- Epson FX Emulation Cart.(500 mono) £45
- DJ 500/510/550 Dust Covers £6
- 636G 50 x Transparencies A4 £35
- 636J 50 x Glossy Paper A4 (also XL) £35
- 630Z 50 x Cut Sheet Paper A4 £15
- 500 Sheets A4 90gms Cartridge paper £7

### Plug In Font Cartridges for DJ 500

22706B - Prestige, Elite, Line Draw £55
22706C - Letter Gothic & HP Line Draw £56
22707P - Proprint Emulation Cartridges £57

### Fujitsu Printers

| | Printer | CSF | Ribbon |
|---|---|---|---|
| B100 Inkjet | £146 | £35 | £14 |
| B200 Inkjet | £209 | £35 | £14 |
| DL1150 | £209 | £99 | £6 |
| DL1250 | £309 | – | – |
| VM600 Laser | £529 | – | – |
| VM600E | £769 | – | – |

## Roland Plotters

| | | | |
|---|---|---|---|
| DXY1150 | £575 | DXY1250 | £725 |
| DXY1350 | £939 | DPX2600 | £POA |
| Sketchmate A4 | £335 | A3 | £449 |

## Printer Labels

**(On continuous fanfold backing sheet)**

| | | |
|---|---|---|
| 1,000 | 90 x 36mm (Single Row) | £4.50 |
| 1,000 | 90 x 36mm (Twin Row) | £4.60 |
| 1,000 | 90 x 49mm (Twin Row) | £4.95 |
| 1,000 | 102 x 36mm (Twin Row) | £4.70 |

### Laser Printer Labels on A4 Sheets

2400 – 70 x 37mm (3 Rows x 8) £15.25

## Listing Paper (Perforated)

- 1,000 Sheets 9.5" x 11" Fanfold £5.50
- 2,000 Sheets 9.5" x 11" Fanfold £8
- 1,000 Sheets 9.5" x 11" NCR 2 Part £21
- 1,000 Sheets 15" x 11" Fanfold £7.50
- 2,000 Sheets 15" x 11" Fanfold £11.50
- 1,000 Sheets true A4 Fanfold 70gms £9
- 2,000 A4 Fanfold Paper £15
- 500 Sheets A4 80gms Bond £2.50
- 500 Sheets A4 90gms Cartridge for Ink Jet/Laser printers £7

## Printer Leads

- PC Parallel 2m £4; 5m £8; 10m £13
- 25pin D Male/Male 2m £4; 5m £8
- Centronics Double Ended 4' £5; 6' £6
- RS232 Leads Various £POA
- **PC Keyboard Extension lead coiled £5**

## Microvitec Monitors

- Cub 1451 - 14" Medium Res for BBC £199
- Cub 3000 - 14" Medium Res for Arc £195
- Cub 1440 - 14" Multiscan for Arc £389
- Cub 1450 - 14" Multiscan for Arc £POA
- Touchtec 501 for BBC £239
- Touchtec 3000 for Arc £239

## Acorn Monitors

- AKF30 14" Med Res RGB £199
- AKF40 14" Med Res RGB £199
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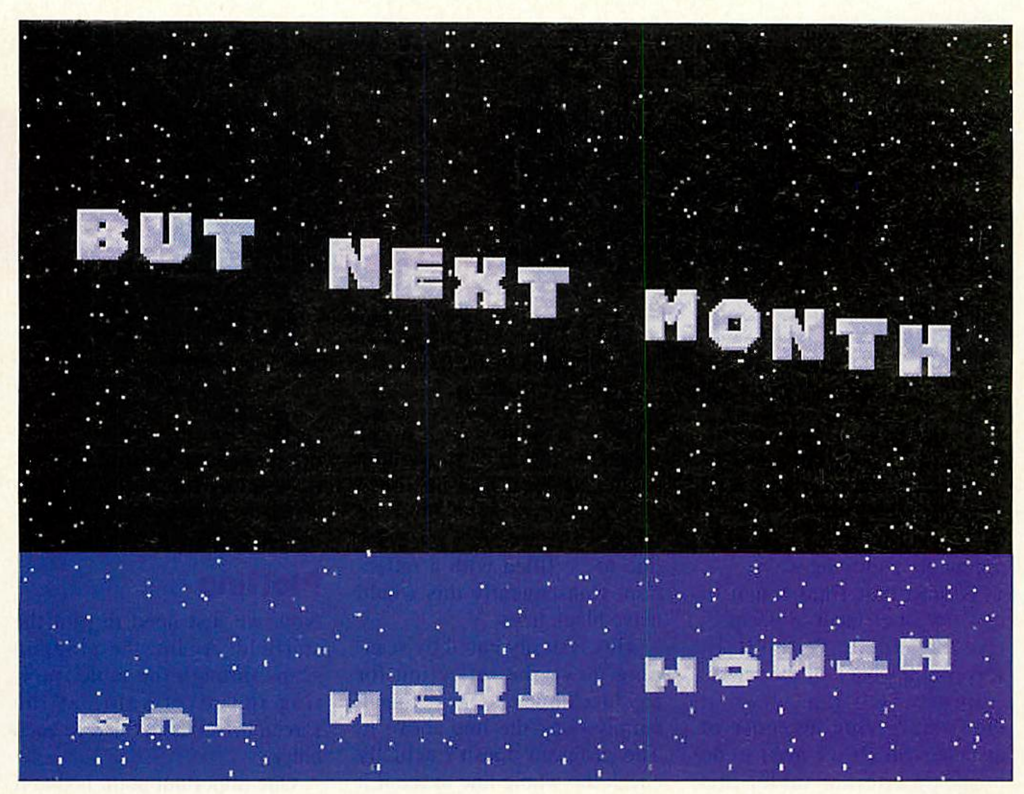
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# Showing off

Mark Hobson continues his trip into the shady world of the graphics demo with two new modules

After last month's rather heavy introduction to our modular demo writing system, we'll now take a relatively straightforward look at two new modules.

The first produces a nice water reflection of the screen, and the second one produces the legendary star-field.




Scrolling text, reflections and your very own starfield

## Water module

If you want to simulate reflections in water, then there are several points to be taken into consideration:

- The image to be reflected is just above the top of the water
- The colour of the reflected image is based around blue
- Usually, the reflected image tends to oscillate upon the ripples

Although these points may seem obvious, it is as well to bear them in mind when designing the program.

Looking at the first point, it's obvious that we need to mirror the section of the screen above the water level in order to produce the reflection. Therefore, any horizontal screen line below water level will be a reflection of the corresponding screen line above the start of the water.

So initially, to produce a simple reflection, we copy the nth line above water level to the nth line below to give us a mirrored image of a part of the screen. For this demo, I decided that the water should occupy the bottom third of the screen, reflecting the middle third of the screen.

## Blue shades

After plotting the reflected area we need to change the colour of each pixel to a slightly bluer shade. To do this, we need to understand how the colour value of a pixel is defined in terms of red, green and blue.

As we are writing directly to the screen memory, we have to deal with each pixel in a format which is suited to the video hardware. This is why the colour format may seem slightly illogical.

Figure 1 shows the colour format for one byte. The red, green and blue values are held in two bits each, allowing a range between 0 and 3.

If the three colours could each produce four different brightnesses, then there would be a maximum combination of 64 colours. Therefore we have two more bits, called the tint, acting as a third bit for each of the three colours, thus producing the 256 colours.

So, getting back to our water, we want to make the colour of each pixel slightly more blue. Therefore, we could make sure that all the bits within the pixel's colour byte that represent blue are always set.

Basically, this just involves ORing the pixel with the binary value %10001000, to force the blue bits to be set.

Now we know how to change the shade of a pixel, we have to apply this to the water area, in this case, a third of the screen. If we did this byte by byte it would take ages, so the LDM and STM instructions are used instead. What happens is this:

- As much screen memory as possible is loaded into the registers using LDM
- For each word, the corresponding four bytes are extracted
- These are then ORed with %10001000 to shade them blue
- They are then combined back into words
- Finally they are written back to the reflected screen position using STM.

## Ripples

Now all we need to complete our reflection is to simulate the motion of waves flowing though it. The method used is fairly similar to how the scroll-text waveforms were produced last month.

A table of y-position offsets in the form of a sine wave is created before the program is run. Then, as each line is reflected, the destination address is offset by the value in the table. As the program proceeds to the next line, it also proceeds to the next entry in the table.

Effectively, what happens is that each horizontal line in the reflection is moved up so many lines, according to the height

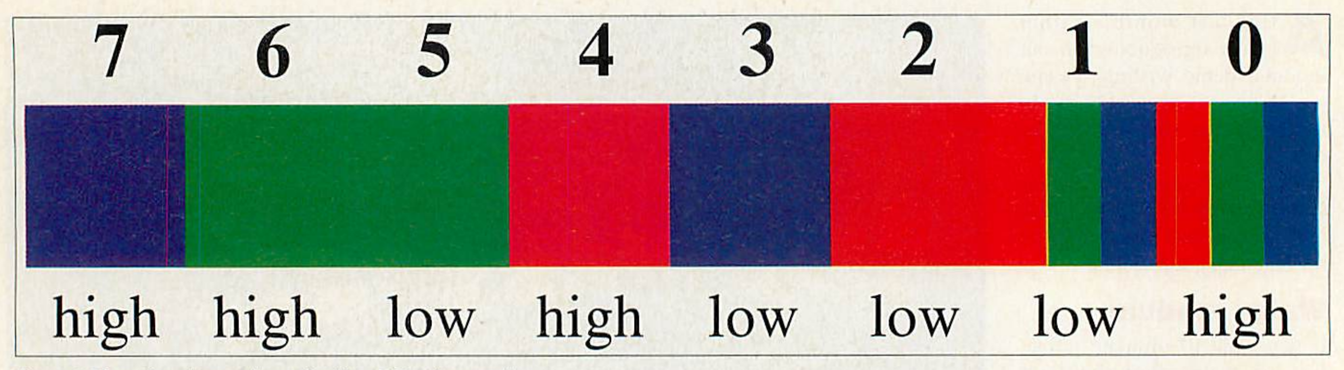



Figure 1: The colour format for a pixel in a 256-colour mode

of the wave at that point. Rotating through the table of offsets in each frame will cause the sine wave to 'travel' through the reflection, so producing a moving wave.

To add that final touch of realism, an element of perspective is added. Without it, waves at the back of the reflection are as big as ones at the front, giving no sense of distance. So all we need to do is create another table, this time containing some scale factors.

The idea is that each line has its unique scale factor which is multiplied by the height of the wave at that point, therefore scaling it down according to how far away it is. This has the effect of waves further away being smaller than closer waves.

As the scale factors grade the wave down, the factor actually ranges between one and zero. Therefore it is a real number and cannot directly be stored in the table, which can only hold integers.

So the real number is multiplied by a constant (usually in the form of $\log_2 n$) to turn it into an integer, and then stored. After the program has eventually multiplied by the scale factor, it must compensate for it not being a real number by dividing by the constant (or in our case, by performing an ASR #n, shifting to the right n bits).

Now that we have added wave motion to our reflection, the reflected image does tend to stretch vertically because of the sine wave. Due to this fact, we can now get away with reflecting the top two-thirds of the screen into the bottom third.

This would normally look wrong as the reflected image is usually the same size as the image, but in this case it works well. One last thing to mention is that as each line has been offset according to the sine table, we cannot rely on every line to be filled with a reflection. Consequently this would leave black lines.

This is easily cured by scanning down the reflection for any black lines; if one is found, simply copy the line above it. The program doesn't actually check the whole line to see if it is black, only the first word on the line, which is cleared before plotting.

If you run the compiled demo on the cover disc, you'll see that the water scrolls onto the screen; this is achieved by the water module itself.

## Starfield module

The starfield is perhaps the most common feature in demos, along with scrolltexts, and it would seem criminal to some for a demo-writing series to completely ignore this tradition. Therefore, I've written a very simple parallax right-scrolling starfield.

The basic procedure of any starfield is this:

- Move the stars into their new position
- Display the new starfield

All necessary data about each star, like position, speed and colour is held in a table, which is created before the program is run.

To move a star into its new position, we have to add its speed value to the current screen position, and store it back into the table. Because of the way that the screen memory is laid out, we do not need to check if the star moves off the right-hand side of the screen, as it appears on the left-hand side of the next line down.

The fact that the star appears on the next line is unnoticeable to the eye, so the star only needs repositioning when it overshoots the bottom of the starfield. In this case, the star is moved to the top of the screen.

## Plotting

Now we just need to plot the starfield. Again, the program scans through the table, plotting the pixel value at the screen offset as defined in each entry.

One important point is that if something has already been plotted on screen, the starfield should scroll 'underneath' it. To do this, all we need to do when plotting a star is to check whether the pixel already on screen is black; if it isn't, then don't plot the starfield pixel.

This allows us to draw the screen and then plot the starfield last. The advantage of using this method is obvious.

Say, for example, that we wanted an irregular shaped background sprite with a starfield scrolling underneath it. We could do this in two ways: we could plot the starfield first, and then the sprite on top with a mask; or we could plot the sprite without a mask, and then the starfield underneath.

Obviously the latter method is quicker, because it doesn't require plotting with a mask.

Finally, to allow the stars to move at fractions of a pixel-per- frame, both the position and speed values in the table are initially multiplied by a constant, to allow for real numbers, in the same way as the water module achieves its scale-factor table.

So before the star's screen position is calculated, it is divided (or shifted) by the constant.

One final point is that when the star module is introduced into the demo, the stars appear to fade onto the screen. The star module achieves this effect by incrementing the number of stars from one up to the maximum number of 512.

As the colours of the stars are defined so that the dark stars are at the start of the table and the light stars are at the end of the table, it looks as if they slowly fade in.

## Applying

On this month's cover disc, two more directories have been added to the *Modules* directory: *Stars* and *Water*. These both contain three files, *Info*, *Module*, and *Source*.

*Source* is a Basic program with embedded assembler, which is used to create the *Module* file. *Info* describes which options can easily be changed by editing the start of the *Source* file.

If you want to change some aspects of the demo – turning the sea green for instance – you will need to change the *Source* file and then run it to recreate the *Module* file. Run the *!SetSysVar* utility first so that the program knows where to save the updated module.

You will then need to re-compile the demo using the new module. Run the *Compile* program, which will prompt you for a couple of filenames, and then save your new demo, with an option to run it.

It is best to copy all the demo files to another disc first and work from the copies, in case you accidentally stop one of the modules from working properly

And that's it for this month. Next month I'll be rounding off the demo by adding modules for background sprites, bouncing balls and music.






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*A3000 needs external interface box

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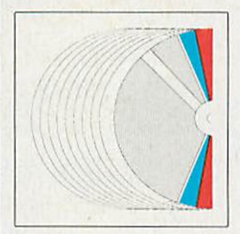

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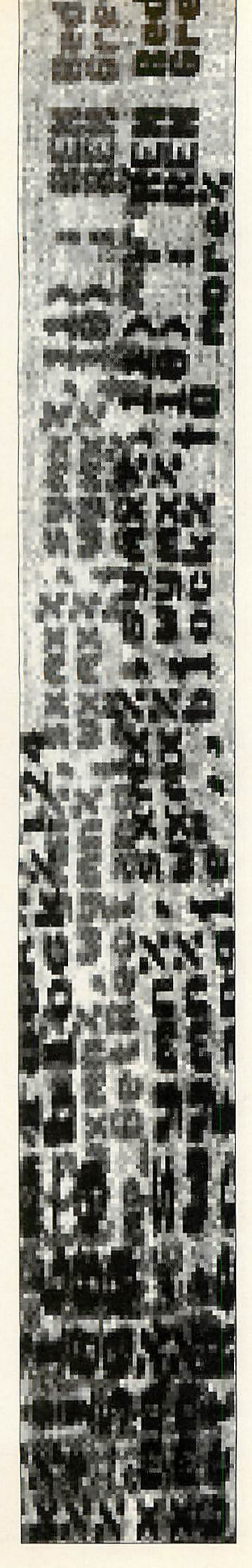
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# Back to Basics

In part ten of this series, David Matthewman looks at embedding data in a program and tackles the subject of line numbers.

Programmers often wish to include long lists of data in their programs. For example, if you were trying to plot a complicated shape on the screen, the program would need to know the coordinates of all the points to be plotted.

One way of doing this would be to use an array, as described in the January issue. This involves having a long list of lines setting up the values of the individual elements of the array, as follows:

```
coordinate(1,1) = 100
coordinate(1,2) = 100
coordinate(2,1) = 0
coordinate(2,2) = 100
coordinate(3,1) = 0
coordinate(3,2) = 0
coordinate(4,1) = 100
coordinate(4,2) = 0
```

which will set up a 100 by 100 square.

This gets very tedious to type in and can also occupy a lot of unnecessary space. It would be very simple to set up a loop to cycle through values in the array, so what we need is some way of storing the coordinates and reading them one by one. Basic provides two commands for doing just this, DATA and READ.

## DATA and READ

A DATA statement, like a REM statement, is ignored if Basic tries to execute one when running the program. Its purpose is to mark the position of a block of data within the program.

DATA statements are followed by a list of data; this list can have many forms, a string, a number, even a numeric expression. A READ statement is followed by a list of variables. When Basic executes a READ statement it copies the data after the DATA statement to the variables after the READ statement.

The data is read, starting from the first DATA statement in the program, with following READs working through the next DATA statements in order.

A READ statement may access the same DATA statement several times and values for one READ statement may also be split across two DATA statements.

The following program shows how we could read the 100 by 100 square into an array using DATA statements:

```
FOR i%=1 TO 4
  FOR j%=1 TO 2
    READ coordinates(i%,j%)
  NEXT j%
NEXT i%
:
DATA 100,100,0,100
DATA 0,0,100,0
```

As you can see, this can easily be changed to read any number of coordinates, simply by adding more DATA statements and increasing the number of times the outer loop is executed.

## Out of data

In the example above, the loop read eight items of data, which was the same number as we provided in the DATA statements. More would have been ignored, but if we had provided fewer the program would have stopped with an 'Out of data' error.

This is easy to avoid if we know in advance how many data values we want to read, but what if this is not the case?

The easiest way to avoid running off the end of a list of data is to make the last data set have some predetermined value.

Usually this value is one that would not occur normally in the data, such as coordinates of (-999,-999) or a string "This is the end", otherwise the program might accidentally finish reading the list early.

Listing 1 puts all this into practice by writing a simple program which tests knowledge of the symbols of some of the chemical elements. As we may want to add other elements to the list we have a data value which signals the end of the list.

In this case we stop when we read the string 'End'. Note that we need to invent a symbol for this string, otherwise we will get an 'Out of data' error.

By using a WHILE ... ENDWHILE loop we ensure that the program does not enter the loop at all if there are no elements to be read. This also explains the READ statement on line five outside the loop; if this reads an 'End' string the loop is never entered.

Assuming that there *are* some elements in the list of data, the program repeatedly reads them with the READ statement on line 16, leaving the loop when it reads the string 'End'. It then prints out the user's score, runs straight through the four DATA statements on lines 19-22 which it ignores, and ends normally.

If we need to read the data again, perhaps because we want the user to keep taking the test until all the answers are correct, we can use the RESTORE command.

RESTORE on its own ensures that the next READ statement will read values from the first DATA statement in the

program, but it can also be used to jump directly to a DATA statement later in the program.

## Line numbers

This is a subject that we have carefully avoided so far. For the last nine parts of the course we have treated Basic programs as unnumbered lines of text.

When we have referred to 'line 5' we have meant 'the fifth line down' rather than 'the line that starts with a "5".' In fact, Basic program lines *are* numbered.

When we load a Basic program into an editor such as Risc OS 3's *Edit*, *DBEdit*, *StrongEd* or *Zap*, the editor strips off the line numbers, replacing them when the file is saved. This is normally fine, as neither the programmer nor the program needs to know what the actual line numbers are.

Suppose we have a long list of DATA statements but actually want to get at some of the data in the middle. We can use the RESTORE command to jump directly to a given DATA statement but the RESTORE command needs the *line number* of the DATA statement to jump to.

Listing 2 contains such a RESTORE command and in order to load it you must turn off the 'strip line numbers' option in your editor. This will give you a screen similar to the figure with this article.

The details of Basic line numbering need not concern us here, it is enough to know that each line has a higher number than the one before, but the numbers do not need to be consecutive. In fact, it is usually a good idea to number lines in multiples of 10, at least, so that it is easier to insert extra lines.

## Data blocks

The DATA statements in Listing 2 may be thought of as being in two blocks: one starting at line 1000 and one at line 2000. The user selects which block should be read.

The first values in each block are different from all the others and are a 'header' for the block. Data blocks often contain such headers, giving information about the block, which in this case is the question associated with the data and the last value in the block. These are read first, and the behaviour of the program modified accordingly.

There are two further points to note about Listing 2. Firstly, the DATA statements are after the END statement, emphasising that they can occur anywhere in the program. Secondly, strings need to be enclosed within double quotes if they are more than one word long.

Listing 3 (on the cover disc ) gives an extended version of Listing 2 with much more data and questions asked in a random order. Again, you'll need to turn 'strip line numbers' off on your editor to look at it.

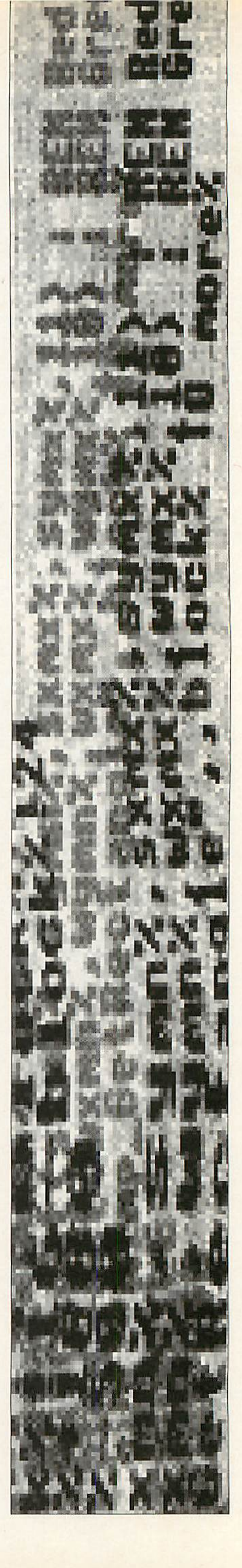
Next month we'll look at reading data from another source – files.

## Listing 1

```
REM  >Listing 1
REM Here, we test knowledge of the symbols for elements.
score% = 0 : total% = 0
READ element$, symbol$
WHILE element$<>"End"
 PRINT "What is the chemical symbol for ";element$;"?";
 INPUT " "answer$
 IF answer$ <> symbol$ THEN
   PRINT "Wrong, it is ";symbol$;"."'
 ELSE
  PRINT "Correct."'
  score% = score% + 1
 ENDIF
 total% = total% + 1
 READ element$, symbol$
ENDWHILE
PRINT "You scored ";score%;" out of ";total%;"."
DATA Hydrogen, H, Oxygen, O, Sulphur, S
DATA Calcium, Ca, Aluminium, Al, Magnesium
DATA Mg, Copper, Cu, Zinc, Zn, Lead, Pb
DATA Tungsten, W, End, E
END
```

## Listing 2

```
   10 REM >Listing 2
   20 REM most DATA statements missed here for space
      reasons
   30 score% = 0 : total% = 0
   40 PRINT "Do you want to be tested upon:"
   50 PRINT "1 - Element atomic numbers"
   60 PRINT "2 - Facts about certain elements"
   65 REPEAT
   70  INPUT choice%
   71 UNTIL choice%=1 OR choice%=2
   72 IF choice%=1 RESTORE 1000 ELSE RESTORE 2000
   73 READ ask$, end$
   80 READ question$, element$, symbol$
   90 WHILE question$<>end$
  100  PRINT ask$;question$;"?";
  110  INPUT " "answer$
  120  IF answer$ <> symbol$ AND answer$ <> element$ THEN
  130    PRINT "Wrong, it is ";element$;", ";symbol$;"."'
  140  ELSE
  150   PRINT "Correct."'
  160   score% = score% + 1
  170  ENDIF
  180  total% = total% + 1
  190  READ question$, element$, symbol$
  200 ENDWHILE
  220 END
 1000 DATA "Which element has the atomic number ", 0
 ........
 2000 DATA "Which element ", "End of test"
 ........
```



# The BJC-600 and RISC OS 3 Turbo Drivers

The new BJC-600 A4 plain paper printer from Canon, combined with Computer Concepts' 24-bit TurboDriver software, provides a key component in the full colour revolution that is occurring in the Acorn world.

**REVIEWS**

"Perhaps the most impressive thing about the BJC-600 is that it can happily print on bog-standard plain paper...
The second most impressive thing is the colour, which is positively vibrant and quite even...
Quite simply it's the best colour printer under £600..."
**PCW**

"The output can be brought as close to perfection as you'll get this side of a dye-sublimation printer...
The BJC-600 enables Acorn users to finally break the colour barrier...
The results are nothing short of brilliant"
**Acorn User**

# AFFORDABLE, HIGH QUALITY COLOUR PRINTING

The printer comes bundled with the latest colour TurboDriver software. This provides the fastest possible print times and full control over half-tones. The software includes advanced grey component replacements and black generation algorithms to ensure accurate colour reproduction and good greyscales - it also avoids 'black flooding' that can occur with other printers.

The package also includes; all necessary leads, start-up and user guide, colour documentation guide, a set of inks, DOS and Windows drivers and sample inkjet transparencies.

## Some of its key features:

- Four colour CMYK inks for the best full spectrum of colours including real black.
- Separate ink cartridges for each of the colours - saves ink and money. It's even possible to change the ink cartridge part way through a page being printed.
- Ultra fast drying inks designed specially to prevent ink spread on plain paper - no other colour ink-jet printer can even come close to the quality obtainable from this printer.
- 360 dpi provides 40% more dots per square inch than 300 dpi printers - visibly better resolution.
- The high quality of print on plain paper means lower running costs than other colour inkjet printers.

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EMAIL: Info@CConcepts.co.uk

Cluttered System folders, incompatible software, accented characters and even faster boot sequences

# QUESTIONS & ANSWERS

**Q** How can I tell what modules are needed in *!System*? When I acquired a hard disc, I went through the *!System* folders on my many floppies and copied any I found that I had not already got into the new folder.

I find that the module area in the task manager gets very large, leaving little of my meagre 2Mb for other things. Is this because I have too many modules?

Are some of the modules only for Risc OS 2 (I am now using 3.1)? How can I clear out modules without resetting, and could my autoboot file be responsible for the large module area?

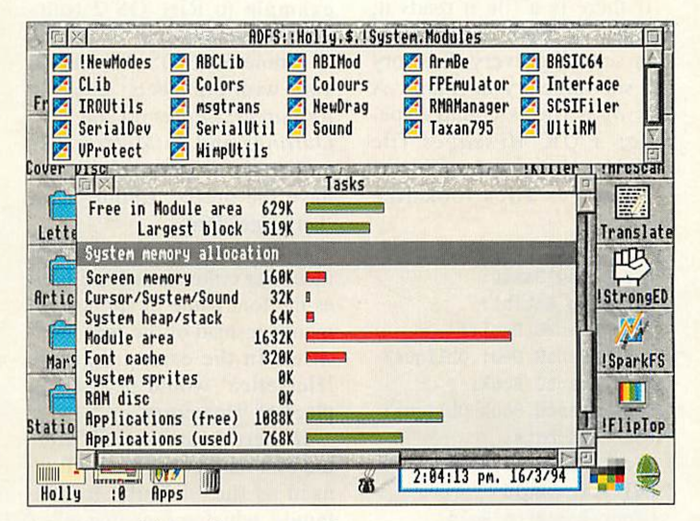
**R Johnson**
**Sheffield**

**A** **The Risc OS 3 Roms contain copies of many modules which do not need to be duplicated in the *!System* folder of your hard disc. If you have Risc OS 3, you can find out which modules you have in Rom as follows:**

**Bring up a task window (Ctrl-F12) and type 'ROMModules'. This produces a list of modules in Rom, giving the module name and version number. Saving this as a text file will enable you to browse through to find which modules you have copies of in your *!System* folder.**

**Note that the filenames, being limited to ten characters, will often be shorter than the module names.**

**If you load the module file into a text editor such as *Edit*, you will be able to find the module name and version number, usually between two and five lines down and immediately before the module date.**



Are your modules really neccessary?

**Duplicate modules with a lower version number than those in Rom may be deleted from your *!System* folder. Modules present in Risc OS 3.10 include:**

- **SharedCLibrary (CLib), version 3.99**
- **ColourTrans (Colours), version 1.07**
- **FPEmulator, version 2.87**
- **IRQUtils, version 2.50**
- **Hourglass, version 2.08**
- **MessageTrans (MsgTrans), version 0.23**

**Keep copies of the all modules you remove until you are satisfied that all your software works fine without them.**

**In future, improved versions of these modules may appear, which will have higher version numbers. If this is the case, you will need to copy these into your system folder on your hard disc, and they should load in automatically from there when needed.**

**Most modules do not usually need to be loaded in your boot sequence. Exceptions to this include virus-protection modules, general desktop enhancers and any modules which insist upon being loaded before the desktop is entered.**

**Any other modules will be loaded by applications as and when they are needed, assuming that the applications have been written properly. Modules should always be loaded with a command of the form:**

```
RMEnsure module_title
version_number *RMLoad
module_file
```

**This ensures that a particular module is never overwritten by an earlier version. In particular, it will only load a module from disc if it is a later version than the one in Rom.**

**The problem of the ever-growing module area (RMA) is caused by poor memory management routines in Risc OS. The free space in the RMA can easily become fragmented, and the RMA can only be shrunk if there is free space at the end of the area.**

**The 'RMTidy' command, which compacts the RMA, cannot be run from the desktop. There is a PD program available called *RMAManager*, which can help solve the problem, and which is available from good PD libraries.**

***RMAManager* keeps the module area as compact as possible, although it can cause some programs – and the desktop – to crash when they exit, so it should be used with care. Failing that, we can only wait for a new version of Risc OS with better management of the RMA.**

**Q** I recently bought *Easy C* from Risc Developments, but found that it crashed as soon as I tried to run it. I reset my computer using Ctrl-Shift-RESET to disable my *!Boot* sequence and, holding down the Ctrl key while opening directories so that no other *!Boot* sequences were run, tried again.

The program ran with no problems this time. By commenting out sections of my boot sequence, I tracked down the culprit, a public domain module called *Zoomboxer*, which I now no longer run. Shouldn't software houses check for this sort of problem?

**Mrs A Dodgson**
**Derby**

**A** **In an ideal world, they would. However, there is so much software out there that it is impossible to check that every piece runs with every other piece.**

**This is especially true in the public domain scene where there is a wealth of software which may use unofficial SWI calls or file formats, and where programs are written by**

people who cannot afford to test their programs with every piece of commercial software.

Even when a problem is found it may be difficult to find the cause, or impossible to correct without a major re-write of the program. Sometimes the manual or *Help* file provided with the program will list known problems.

The different archiving systems on the Archimedes can cause problems if more than one tries to access the same file, as might be expected. For instance, *SparkFS* can cause problems with the archiving system on the *Acorn User* cover disc.

I should add that Mrs Dodgson used the right method to find out if it was another program which was causing *Easy C* to crash. When in doubt, run the program in isolation, and gradually re-enable boot sequences until the problem recurs.

## Advice given

Nick Pearson from Ipswich has written in with several tips for speeding up Boot sequences, following our March column. These only apply to Risc OS 3 users, and are a bit more involved than our previous hints. Here is his tip for speeding up the loading of large *!Font* directories:

The Font Manager only scans the font directory to build up a table of available fonts if there is no *Messages* file present in the font directory.

If there is a file it reads it, which is a much faster option than scanning every directory and sub-directory in *!Fonts*. A *Messages* file is country specific; a UK *Messages* file would be *Messages1*.

*Messages* files look like this:

```
BEncoding_Base0:
Encoding_Latin1:
Font_AvantG.Demi:*
Font_AvantG.Demi.Oblique:
Font_AvantG.Book:
Font_AvantG.Book.Oblique:
Font_Dingbats:
LFont_Homerton.Bold:
Helvetica.Bold
LFont_Homerton.Bold.
Oblique:Helvetica.Bold.
Oblique
LFont_Homerton.Medium:
Helvetica.Medium*
LFont_Homerton.Medium.
Oblique:Helvetica.Oblique
```

The 'BEncoding_' and 'Encoding_' lines are only needed if your font directory contains encodings for its fonts, as the *Resources:$.Fonts* directory does. Fonts with a prefix 'Font_' do not vary with alphabets, which applies for example to Risc OS 2 fonts and the symbol font.

Some Risc OS 3 fonts do vary with alphabets: those in *Resources:$.Fonts* do and have *Outlines* and *IntMetric* files ending in a numeral. These have the prefix 'LFont_', for 'language' font.

If there is text after the font identifier colon, it will be used as the font name in application menus instead of the font identifier. In the example given, 'Helvetica' would be used in place of 'Homerton'.

If there is an asterisk after the font name, this font will be used as the 'default' for the family, which means that when you click on a menu entry for a font family you will select that particular font. This only works on applications that use this Risc OS 3 facility.

The down side of this is that you must keep a *Messages1* file in each of your font directories, and keep it up to date with all the fonts in the directory, otherwise they won't be recognised. Further details can be found in the Programmer's Reference Manuals on pages 3-410 and 4-486 to 4-487.

Thank you to Nick for that advice. Users of both Risc OS 2 and 3 might also benefit from a program called *FontDir available from LOOKsystems (0603) 764114 for £35, which offers faster scanning of font directories as one of its many useful font-management features.*

**If you've got a problem, drop us a line at Questions and Answers, Acorn User, Europress Enterprise Ltd, Europa House, Adlington Park, Macclesfield SK10 4NP, and we'll do our best to answer.**

# Acorn Customer Hotline

## Disabling relocatable modules

In some situations, such as in a classroom, it may be considered desirable to disable some of the applications and relocatable modules which are an integral part of Risc OS.

Modules which are temporarily disabled will remain so until the machine is switched off. Modules which are 'permanently' disabled (by *Unplug) will remain so until the machine is reset via a Delete-power on.

The routines for disabling relocatable modules may be inserted at the start of the *!Boot* or *!ArmBoot* file which is to be run when the machine is switched on or reset. *Configure* can be temporarily disabled using:

```
RMKill !Configure
```

and can be unplugged using:

```
RMReinit !Configure | Put the module back if it is
already unplugged
Unplug !Configure    | Now take it out.
```

With Ethernet-based networks, it is recommended that the Broadcast Loader is disabled. This may be achieved using:

```
SetEval BLoader$Module 1
RMEnsure BroadcastLoader 0 SetEval BLoader$Module 0
If BLoader$Module Then RMEnsure EconetA 0 SetEval
BLoader$Module <BLoader$Module>+1
If BLoader$Module=2 Then Unplug BroadcastLoader
Unset BLoader$Module
```

The script works by setting a flag, BLoader$Module, which is then altered according to a series of tests, as follows:

- Set the flag to 1.
- Check if the Module is there. If it is *not* then set the flag to 0.
- If the module is there, check if Econet is there too. If it is, increment the flag.

This gives us the situation that if the Broadcast Loader is already disabled, the flag is set to 0. If the Loader and the Econet module are enabled, the flag is set to 1 and if the Loader is enabled and Econet software is unplugged, the flag is set to 2. finally in this sequence:

- If the flag is set to 2, disable the Broadcast Loader.
- Remove the system variable used for the flag.

### New Products and Upgrades

*Printers* version 1.22. *PhotoView*, Acorn's Photo CD Support System incorporating CDFS 2.21: £34.99 + VAT. These are available from Acorn Approved Dealers and Education Centres.

Level 4 Release 3, including Acorn Application Accelerator: £99 + VAT, inc p&p. This is available from: Vector Services, 13 Dennington Road, Wellingborough, Northamptonshire NN8 2RL. Cheques to be made payable to Acorn Direct.




Dave Lawrence and Dave Acton continue their monthly look at programs, for all Acorn Users

# Character editor

This is one of those standard utilities which we don't seem to have covered in any of the countless *INFOS.

*ChrEd* is an easy-to-use application that provides its own help via the *Help* application (load it from Rom if you have Risc OS 3). Once installed on the icon bar, double-click on the *ChrEd* icon.

A magnified version of the current character is shown. Click Select or Adjust to set or clear a pixel respectively and click on Store to register your changes to the character.

Swap can be used to edit the previous definition of a character, Grab is used to grab the definition of a character and Default will provide the 'standard' definition.

The current character can be scrolled (wrapping around at the edges) with the arrow icons, flipped and rotated. Invert and Clear perform the obvious functions.

Logical operators are provided in the form of icons. These allow the current definitions to be ANDed, ORed or EORed with a selected character.

| Icon | Key(s) |
|---|---|
| Default | Ctrl-D F9 |
| Rotate | Ctrl-Q Ctrl-A |
| Flip X,Y | Ctrl-X, Ctrl-Y |
| Clear | Ctrl-C |
| OR | + |
| AND | & |
| EOR | * |
| Character | Ctrl-O |
| Char set | Ctrl-P |
| Grab | Ctrl-G F7 |
| Store | Ctrl-S F6 Insert |
| Swap | Ctrl-W F5 |
| Save | F3 |

Figure 1: *ChrEd* Keys

For example, EORing with an underline character allows the simple definition of an underlined font, and the OR button could be used to add accents to several vowels.

Undo will cancel the last store, grab, clear, default or logical operation. It can be clicked again to 'redo' the operation.

Some of the buttons may be used to alter the whole font in one go. Click on Character Set to select 'whole font' mode. Those buttons still selectable will now take effect on all characters.

Saving is via a standard save box. Unlike most save boxes, radio icons are provided to allow the saving of specific groups of characters.

'All' means all the set (including Delete – ASCII 127), 'Top bit set' means the characters shown in the lower four rows of the character set display, 'Top bit clear' means the rest of the characters (Space to '~') and 'Special' allows user-defined groups.

Enter a string specifying which characters are to be saved in the writable icon below. Click on the save box to reveal four more buttons which become active when entering the special string. The buttons act as follows:

- Normal \: any special meaning the following character may have is ignored. To include \ as a character to save, click on it twice!
- To -: range of characters, starting with the preceding character, and ending with the following character. For example, A-Z will select all upper case letters for saving.
- Hex,: Character code in hexadecimal. There *must* be two hex digits following this code.
- Ctrl |: control sequence. Use |@ for ASCII 0, |A or |a for ASCII 1...|Z or |z for ASCII 26 and so on. || is ASCII 124 and |? ASCII 127. |! will add 128 to the following character's code. You cannot select unprintable characters (ASCII code less than 32) for saving; if you try to select Delete, it will be omitted.

There are three ways to load a font: double-click on the file, drag it to an editing window (merging it with the font present in that window), or drag it to the *ChrEd* icon.

Any BBC font file can be loaded, provided that the file length is non-zero, no greater than 2240 and a multiple of 10; and each definition must start with CHR$ 23 to be a printable character.

Select 'Test font' from the editing window's menu and the screen will be redrawn automatically using the font. To restore the standard font, select 'Default font'.

As well as the keyboard short-cuts shown in Figure 1, clicking Adjust will generally reverse an icon's action. Within the character set display, Select or Adjust selects the character under the pointer.

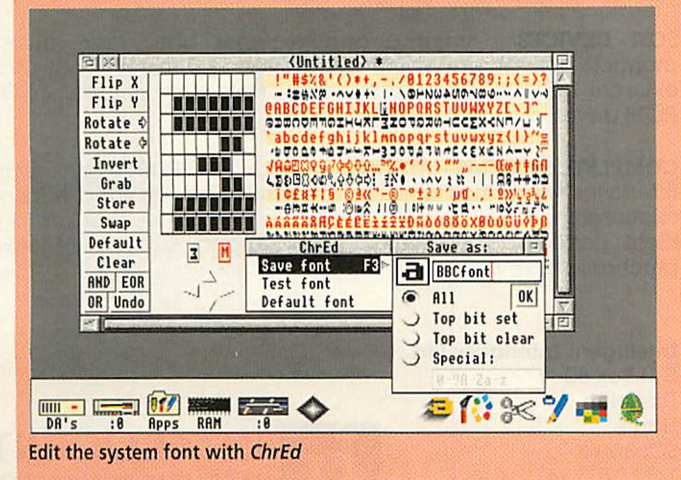
Double-click Select to grab the character definition or Adjust to store the edited definition. Shift double-click Select to grab the character's default definition or Adjust to swap the character definition with the edited definition.

To use a created font simply *Print it, or load it somewhere in memory and use

```
SYS "OS_WriteN",<load address>,<file size>
```

to set it up.

**Author: Darren Salt**




Edit the system font with *ChrEd*

# FontInstall tip

```
REM >!Fonts.Install
DIM q% 255
S%=0
REPEAT
SYS 12,10,"<Obey$Dir>.",Q%,1,S%,256 TO ,,,,S%
IF S%<>-1:IF Q%!16=2 OR Q%!16=3:OSCLI "FontInstall
<Obey$Dir>."+FNzt(Q%+20)+"."
UNTIL S%=-1
END
DEF FNzt(A%):LOCAL A$:WHILE
?A%>31:A$+=CHR$?A%:A%+=1:ENDWHILE:=A$
```

Figure 1: !Fonts.Install

Simon Birtwistle of Liverpool has supplied us with a tip for users with lots of fonts. He explains the problem: 'Accommodating the vast number of fonts one acquires is often a pain – the 77 object limit imposed by the ADFS effectively limits you to 71 font families per font directory.

'The usual answer is to have a number of font directories – *!Fonts2*, *!Fonts3* etc. but each of these must have their own *!Boot*, *!Run* and *!Sprite* files and they will all need their own Filer_Boot command to load them in your boot sequence.'

Simon's short solution allows all your fonts to be stored within the single *!Fonts* directory. First, change the last line of *!Fonts.!Boot* from

```
FontInstall <Obey$Dir>.
```

to

```
Run <Obey$Dir>.Install
```

Now create sub-directories within *!Fonts*. Simon uses just two – A-M and N-Z, but you can have as many as you like and call them whatever you want. Move your fonts into these so that *!Fonts* only contains your new sub-directories and no actual font directories.

Now enter the small program shown in Figure 1 and save as *!Fonts.Install*. This little listing simply scans the contents of *!Fonts* for directories (or images) which it then installs as font directories using *FontInstall.

With a maximum of 70 sub-directories each holding up to 77 font families, your single font directory can hold 5390 font families (although you'll need a pretty big font cache to use them all).

**Author: Simon Birtwistle**

# Simon the icon

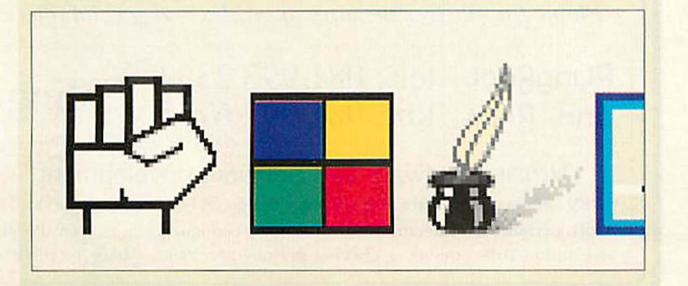
Okay, hands up who had one of those pint sized (sorry, half litre) flashing flying saucers? Actually, more likely hands up whose friends had the ultimate in electronic wonderment and would only let you have a go for swapsies with a Kevin Keegan bubble gum card. I think I missed out somewhere as nobody had Simon when I was at school, although Alex Weir did have Kerplunk...

Nick Kennedy, who's at school now (being 14), has come up with a very neat little desktop game – an icon bar version of Simon. No windows, no complicated control keys, no flashing lights and whistles. Oh, actually, yes, there are flashing lights (well, squares) and whistles (okay, okay, beeps), but in all truthfulness, that is all there is!

To play, double-click *Simon* to install the game on the icon bar and click on it to start. In time-honoured tradition, all you have to do is watch the ever-growing sequence of flashing lights and repeat it back to the computer by clicking on the right coloured squares in the same sequence.

Gosh, what fun we must have had in the old days. If you make a mistake the computer will inform you, but you may ask for 'help' by clicking with Adjust. The game will then 'forget' your guess so far and repeat its sequence. If you correctly repeat a sequence of 20, you'll be rewarded with the highest accolade in the games world - a Well Done box. It's amazing how far we've progressed in ten years - Simon the Hedgehog just hasn't got the same ring to it. Any one for a desktop version of Kerplunk?

**Author: Nick Kennedy**



# In detail - Simon

Nick Kennedy's icontop Simon game seems like a ripe candidate for the forceps and tweezers, so let's mask up and see what's going on in there...

There are only two parts to this game, PROCinit and PROCmain, what could be simpler? PROCinit sets up the variables for the game, loads the sprite file into memory and creates the icon bar icon with Wimp_CreateIcon.

Control then passes on to PROCmain. First an ON ERROR statement is used to trap anything untoward and report it nicely. A tight REPEAT loop follows the repeated call PROCpoll until the user decides they can't stand the pace and quits.

PROCpoll handles the multi-tasking with a call to Wimp_Poll. On return from this a number of things can happen. Null events (code 0) allows the computer time to show the sequence so far, mouse clicks are handled by PROCmouseclick, menu selections are decoded into either start, toggle sound or quit, and finally messages (codes 17 and 18) are detected and the program quits if a quit message is received from the Wimp.

When a game is started, PROCstartplay is called. This initialises a sequence length of twenty and calls PROCpattern to show the first colour. Mouse clicks are then decoded by PROCplay and the colour selected is ascertained.

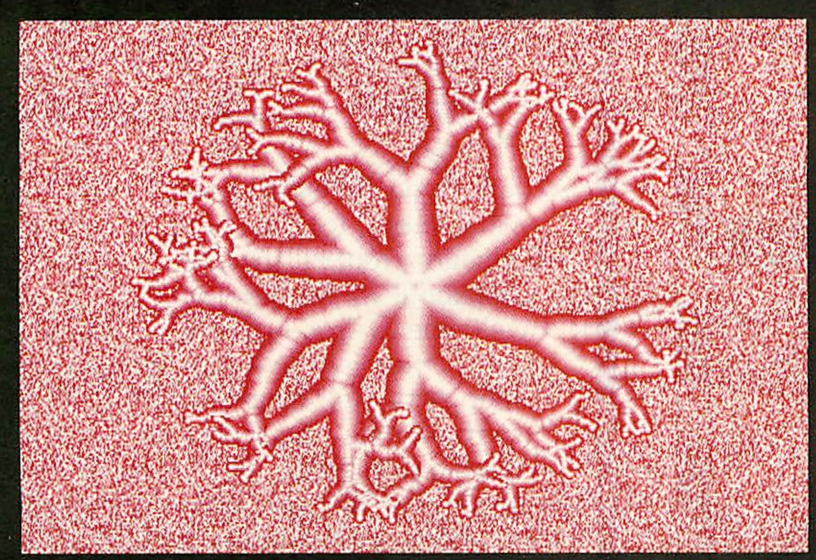
If the colour is wrong, PROCgameover is called, otherwise the colour is confirmed by flashing it with PROCpatshow. PROCpatremove and PROCpatshow are used in the null handler after the Wimp_Poll to display the sequence. All of this is pretty standard code.

Two other noteworthy sections are:

1) PROCcreateicon which creates the game board by redirecting output to a sprite, and RECTANGLE FILLing the appropriate corner (0-3). A value of 4 is interpreted as filling all corners when the game is idle.

2) PROCchangeicon. This calls Wimp_SetIconState for the icon with values of 0 and 0. Although this leaves the icon state unchanged, it prompts the Wimp that the icon needs to be redrawn.

# Vibe trio



Both 'map' a pattern around a ball ('well, almost' says Jan). *Marble* requires 736K and *Marble2* 1120K (used for storing consecutive sprites in the animation).

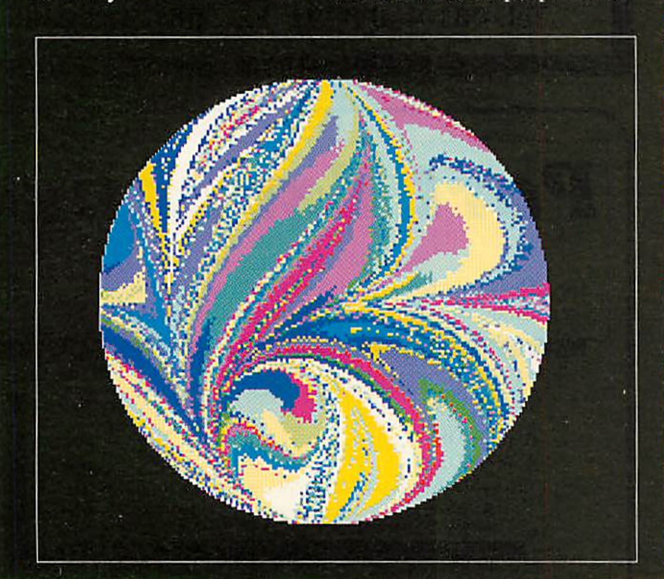
Both achieve their effects exclusively using OS_SpriteOp. For example, the squashing of the pattern onto the ball is achieved by grabbing a line from the screen and then plotting it scaled, reducing the scale towards the 'poles' of the ball.

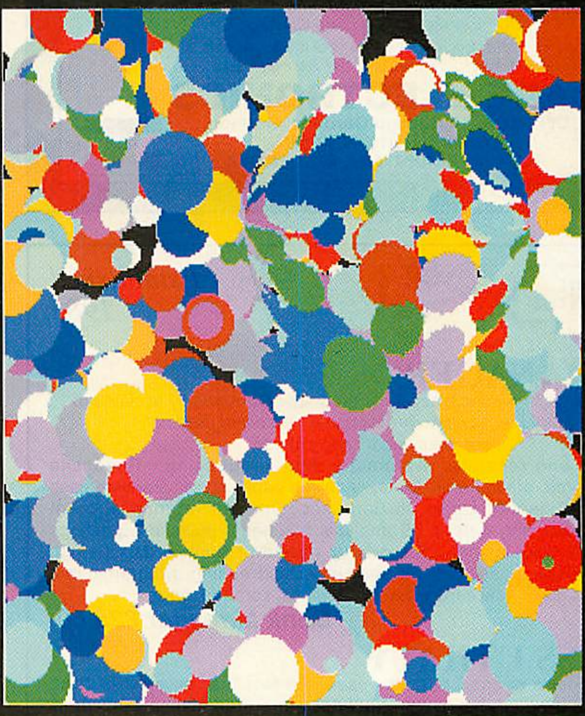
Finally, not much can be said about *Starfish* other than it is a variant on Jan's earlier and quite disgusting program Tentacles. The picture produced is like a 'mutated Starfish' – perhaps we should have rechristened it Sellafield...

**Author: Jan Vibe**

Three more quickies now, from Jan's huge repertoire of doodles. He continues to show that even in dear old Basic some excellent and unusual results are possible.

*Marble* and *Marble2* are memory-hungry demos, so reduce your font cache and Ram disc size in preparation.





# Elefontiasis

We have had a similar idea to Mr. Tozer's floating about the *INFO directories for a number of months, but seeing it needs a bit of tidying up, we thought we'd carry his for now, and maybe this would prompt us into action to finish our version!

What is this idea then? Well, the name *FontDemo* might give it away. It wibbles through the fonts currently known by your machine and produces a *Draw* file and an *Impression* DDF file, both of which contain examples of each font found. These can then be loaded into the relevant application for viewing, or more usefully, printed out so you can have a hard copy reference.

The *Impression* DDF file simply contains a list of font names in the form font {"Trinity.Medium"} which are interpreted by *Impression* as font change effects followed by a short demonstration string. As there is no means of pagination in *Draw*, a number of separate files are created. This contains a 'font table' at the start which lists all the fonts used in the file and associates a font number with each. The remainder of the file is made up of text commands with different font numbers and the same short demonstration string as the DDF file.

Be warned if you have a lot of fonts resident in your machine, as both *Draw* and *Impression* don't have much fun in such a situation.

A slightly different approach is required to get around the problem of too many fonts and a limited font cache size. We hope to finish off our version and bring it to you soon. If you haven't got too many fonts though, Mr Tozer's utility should do you proud.

**Author: E P Tozer**



Contex Computing

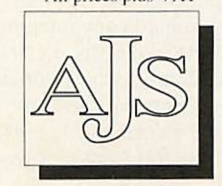





VISA
Access





AJS

# Realtime fractals

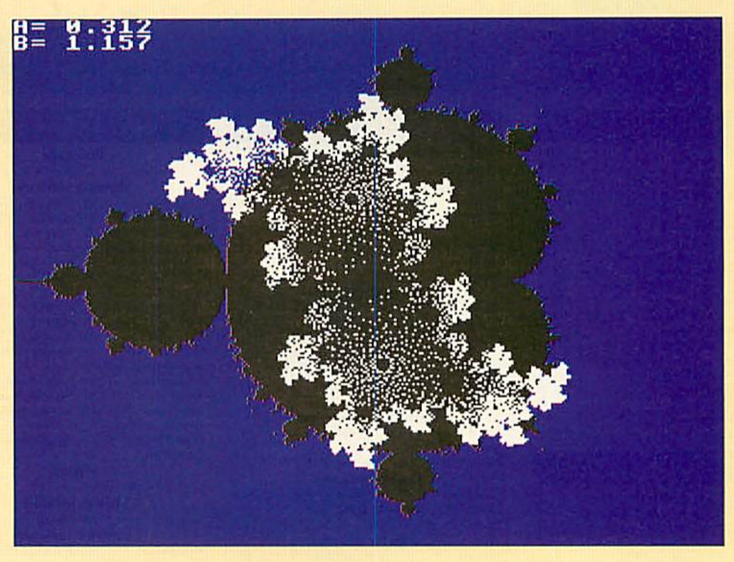
Over to our other Jan now for some very fast fractals. If you are sick of waiting seconds or even minutes for some snail-like program to produce yet another Mandelbrot, try *Julian*.

This is a realtime, interactive, accurate Julia fractal animation. Two operation modes are available, depending on the desktop mode you are in when starting the program. In a high resolution mode, mode 19 is selected, otherwise mode 1 is used.

Moving the mouse causes the Julia fractal to change gradually. Dragging the mouse causes finer changes. The Julia fractal corresponding to the current point in the Mandelbrot picture is superimposed on it. Also the coordinates of this point are shown.

'The fractals' says Jan 'are calculated according to a recursive version of the inverse iteration method', which we're sure will be music to the ears for all you fractal-heads out there.

**Author: Jan Vlietinck**




# Wimp validation strings

We've had a number of enquiries recently about the extended range of validation strings provided by Risc OS 3. So we thought we'd take a little time out and delve into the wonderful world of the PRM.

A validation string is used to inform the Wimp about various aspects of an indirected text icon. In Risc OS 2 the 'commands' were: A to set the list of characters that could be entered in that icon, F to set the foreground and background font colours, L to set the line spacing and S to associate a sprite with the icon in addition to the text.

By specifying a D it was possible to display characters as a dash or star say, for passwords. Risc OS 3 supports all of these with the addition of R, K and P.

## Buttons and borders - R

If the border bit (bit 2) of the icon flags is set, the R command may be used followed by a border type number and colour. This border will then be used instead of the default one. The buttons may also behave differently when pressed. Currently types 0 to 7 have been defined as follows:

0 standard – use a traditional, one-pixel border
1 slab out – use for simple raised icons
2 slab in – use for information fields etc
3 ridge – use to group icons or mark off sections
4 channel – also used for grouping
5 action – use for standard raised, 'pressable' buttons
6 default action – as 5, but use for the default action
7 editable field – used for recessed writable icons

Type 6 should be used for the default button – that is, the one that pressing Return will activate (as used in *Impression* for many years). Types 8 onwards behave as type 0, that is they provide the old-style borders. Buttons of type 5 and 6 will change colour when pressed. By default, colour 14 is used for the background of the pressed state, but you can specify your own colour as an extra parameter. For example, R5,3 is a commonly used type – a pressable button that changes to a darker grey when depressed.

## Keys - K

The K command takes out a lot of work from the key-parsing routines normally associated with multi-icon windows. It can be followed by any number of the following lettered options:

R – Pressing Return will move the caret to the beginning of the next writable icon, if there is one. If not, it will send an ASCII 13 (Return) to the application.

A – Makes the up and down arrow keys move between writable icons. It also handles wrap around, so moving up from the first will move to the last and moving down from the last will move back to the first.

T – This assigns similar functionality to 'A' to Tab and Shift-Tab for down and up respectively.

D – Assigns the 'usual' deletion actions to Delete, Copy, Shift-Copy, Ctrl-U and Ctrl-Copy and will also inform the application of the appropriate key codes.

N – This enables the application to know about all key presses in the icon, even if they are handled automatically by the Wimp.

These last options are particularly useful if you want to know whether the contents of a writable icon have changed. Under Risc OS 2 you would not be told if the user had deleted a character, so the only way to react immediately to such changes was to constantly monitor the writable icon during idle events.

## Pointer - P

The P command makes the pointer change shape while it is over the icon. It should be followed by a sprite name and the co-ordinates of its 'active' point. The appropriate sprite should be available in the Wimp free pool.

For example, writable icons should contain Pptr_write in their validation strings so the pointer changes to a caret when over them: the sprite ptr_write is always in the Wimp sprite pool.



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| BJ200 | 189 | BJ230 | 254 |
| BJ300 | 327 | BJ300 ASF1 | 87 |
| BJ300 ASF2 | 64 | BJ330 | 369 |
| BJ330 ASF1 | 109 | BJ330 ASF2 | 79 |
| BJC600 | 423 | BJC800 | 1199 |
| BJC820 | 1245 | | |
| **EPSON** | | | |
| Stylus 300 | 178 | Stylus 800 | 192 |
| SQ870 | 425 | SQ1170 | 559 |
| Stylus 1000 | 352 | | |
| **HEWLETT PACKARD** | | | |
| Deskjet 310 | 169 | Deskjet310 + ASF | 207 |
| Deskjet 310 ColKit | 30 | Deskjet 500 Colour | 234 |
| Deskjet 510 | 189 | Deskjet 520 | 199 |
| Deskjet 560 Colour | 389 | Deskjet 1200C | 1105 |
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| XL300c A4 | 1805 | XL300c A3 | 1899 |
| XL300 PS | 2575 | | |

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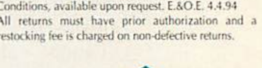
| DISCS - each | 10 | 100 | 250 |
|---|---|---|---|
| 720k dsdd | 45p | 40p | 35p |
| 1.44Mb dshd | 70p | 60p | 55p |
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| 720k dsdd | 50p | 47p | 45p |
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| 40/50 cap. lockable | | 5 | 10 |
| 80/100 cap. lockable | | 5 | 10 |
| Posso stackable 150 | | 15 | 15 |
| Loose labels per 1000 | | 8 | 10 |
| Laser Labels 100 sheets | | 20 | 20 |
| **CABLES** | **2m** | **3m** | **5m** |
| Parallel Printer | 5 | 7 | 10 |
| IBM 25F-25M | 5 | 10 | 15 |
| IBM 25M-M or F-F | 5 | 10 | 15 |
| Printer 36-36 | 5 | 10 | 15 |
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| Canon BJC800 Black | 16 | Canon BJ800 Colours | 18 |
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| Epson Stylus 800/1000 | 9 | HP Thinkjet/Kodak | 8 |
| HP DJ500 Dbl.Cap. | 19 | HP DJ500 Colour | 20 |
| HP 1200C Black | 20 | HP 1200C Colours | 24 |
| HP Paintjet Colour | 20 | HP Paintjet Black | 18 |
| HP XL Black | 15 | HP XL Colours | 17 |
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| Epson LQ860/2550 | 10 | Pana 9 pin KXP-115 | 5 |
| Pana KXP145 24pin | 6 | Pana KX-P155 24pin | 6 |
| Pana 2123 Colour | 15 | Star LC10/20 | 4 |
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# Keyboard

In March we carried a sampler utility called *MakeWaves* by Darren Salt. This featured a little keyboard to try your samples on. We thought it would be nice to have a dedicated keyboard application that allowed experimentation with different samples, pitches and so forth, and that could be used alongside other Risc OS sound application like *Maestro*, *Rhapsody*, *Ultrasonic* or *Notate*. Thomas Daly provides us with just such a program.

After installation, click on the Keyboard icon to open a three-octave piano keyboard. Play the samples using the mouse or keyboard (the *Keyboard* must have the input focus if you are using keys).

All *Keyboard's* features are available from the menu. *Keyboard* keyboard shortcuts (there are far too many keyboards in this sentence) are shown in brackets. Use the Voice submenu (Ctrl-V) to select a voice from those resident in the machine and any others loaded.

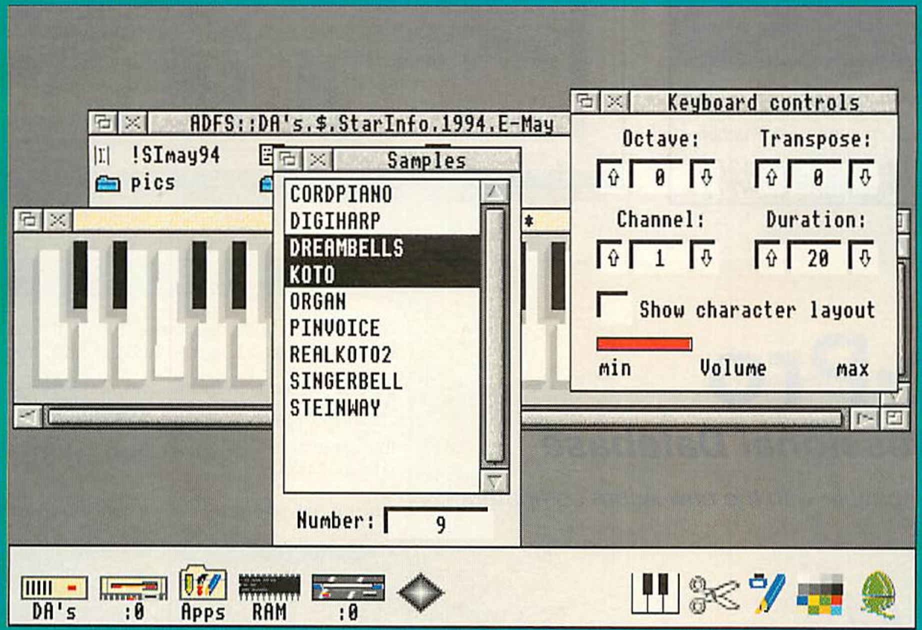
Options leads to Controls (Ctrl-C) which provides a control window to set the pitch, duration and volume. You can also display the 'keys on the keys' with 'Show character layout'. The Tuning submenu (Ctrl-T) is used to 'tune' the sound system in semitones or octaves. Memory permitting, up to 32 samples may be loaded into *Keyboard*. Choose Samples (Ctrl-S) from the Options submenu to display the list and drag the samples onto the list to load.

Bring up the *Keyboard* menu over a sample name and then use the Sample submenu for information, or, say, to delete it. Adjust may be used to select several samples.

Samples can only be used if they are 'installed' using Install (Ctrl-I) or if 'Auto install' is ticked on the Options submenu to automatically install any samples loaded. Remove (Ctrl-R) on the Sample submenu is used to remove a sample from the playable list without deleting it.

*Keyboard* allows you to save a configuration file containing a list of loaded samples, information about which are installed and in which slot, the sound system tuning, and, optionally, all the internal settings of the program.

A standard Save box (F3) is provided. Reload by double-clicking on your saved file. You will be asked to insert the appropriate discs as *Keyboard* reloads the samples in the desired order. Once all the voices are installed, you can load your score and play it with whichever music application you are using, safe in the knowledge that your tin-whistle hasn't mysteriously turned into a gong overnight.




Thomas does point out a couple of pitfalls. 'You may find that when you play middle C on the keyboard, the note produced is not a C at all.

'This happens when sounds have been sampled at pitches other than middle C. Use the Tuning or Transpose functions to adjust the pitch until it is correct.

'Also, please note that this version of *Keyboard* does not support the enveloping of EMR samples. So when optimum playback quality of these samples is required, you should use EMR's own *WFS* application.'

Author: Thomas Daly

# Intelligence tests

Bit of a silly one, this. Drop a text file onto *Analyst* and it will rate your level of literacy. Words of different lengths are counted up and the statistics produced are displayed in a set of windows. Chris's own *ReadMe* file scored 'average', as did this very column.

Basically, the longer the words you use, the brighter you are assumed to be (not a universally accepted rule I might suggest, since most of the people I've ever heard utter antidisestablishmentarianism have been total dorks).

As we understand it, there have been some more sophisticated text analysers written on other machines which can actually give a pretty accurate rating. If anyone has written or converted such a one we would like to see it.

Author: Chris Allen

# *QUIT

Firstly, apologies to Barry Wickett. The wimpslot on his *Insert* program on the March disc was inadvertently changed from 32K to 16K, causing it to crash on many older machines. To correct this, change the wimpslot line in the *!Run* file of the program to:

```
WimpSlot -min 32k -max 32k
```

As always, all contributions gratefully received. Stick 'em on a disc and send them to *INFO, Acorn User, Europress Enterprise Ltd, Europa House, Adlington Park, Macclesfield, SK10 4NP.

Please write your name, address and program title on every disc and include a text file containing the same details. An SAE will ensure your disc's return.

Instructions on how to use your program are also welcome and any extra details about how it works, diagrams (as *Draw* files etc) may also come in handy.

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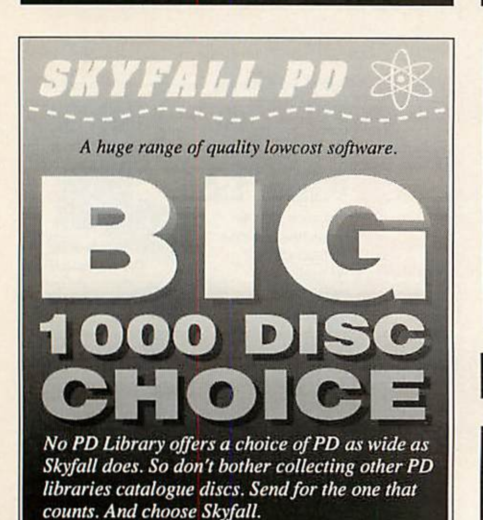
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# THE ACORN USER HANDBOOK

Getting to know your machine is a vital part of learning how to use your computer to its full potential, but who wants to wade through piles of manuals to get at the hard facts?

The *Acorn User* Handbook is a 48-page guide to getting the most from your computer, with five major sections covering every aspect of your machine. Understanding the hardware beneath your computer's bonnet is vital if you are to understand how the computer actually works. The hardware section of the handbook examines all the components of Acorn computers, from processor chips and floppy disc drives to expansion ports.

For all those thinking of expanding your computer, there's an in-depth look at all the peripherals available, such as printers, modems and scanners: decide what you want with our expert guidance.

Risc OS is the most important part of using an Acorn as far as many people are concerned, and the most important aspects are covered, along with loads of hints and tips to help you use your computer more efficiently. The desktop is dissected, with a detailed look at optimum configuration settings, an explanation of all those error messages which crop up, and how to avoid them; the list goes on. Read this section, and you'll find the desktop far more friendly than you thought it could be.

Software makes computers as powerful and as popular as they are, but the range of Acorn software is daunting. Thinking of buying an art package, or a decent word processor? The handbook explains all the categories you'll come across, and tells you the most popular products you should be thinking about.

The final section is potentially the most valuable of all: the one-and-only Acorn Glossary. Jargon-busting is the trickiest part of getting to grips with computing, and with the handbook by your computer, you'll be able to understand phrases like 'clock speed of 33MHz' and 'Risc chips execute machine code instructions faster than Cisc chips'. Invaluable, and fascinating reading.

Illustrated with colour pictures and photos throughout, the *Acorn User* handbook will turn you into a power user who can really use Risc OS machines. Don't get left behind: read the only manual that matters.

**How to add modules to the System folder**

1. Open up the directory which contains your System folder (*!System* in other words).
2. Double-click on *!System* while holding down SHIFT. Another window will open, which shows the contents of the system aplication directory.
3. Double-click on the *Modules* directory. Yet another directory window will open. This directory will contain some of the modules shown opposite, but not necessarily all.
4. Drag the modules you want to add into this directory. This is where applications look to find shared modules, so add new versions of shared modules here.

**How to add fonts to the Fonts folder**

1. Open up the directory which contains your Fonts folder (*!Fonts* in other words).
2. Double-click on *!Fonts* while holding down SHIFT. Drag any font definitions you want to add into the window which opens. Finally, double-click on *!Fonts* to install them.

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**How to create a desktop boot file**

1. Set up your system in the state you would like it to be whenever you turn it on. Applications loaded, memory allocation, windows, the Pinboard: all these are recorded.
2. Open up the root directory for your boot disc. If you have a floppy-only system, this will be the floppy containing your system and scrap folders. If you have a hard disc, it will be the root directory.
3. Click Menu over the Task manager icon (the Acorn on the far right of the iconbar) and move into the Desktop boot submenu. Drag the file icon to your boot disc, where a file called *!Boot* will be saved containing details of your system setup.
4. If you do not want the directory viewer for your boot disc to appear when you boot up, load *!Boot* into *Edit*, find the line beginning Filer_OpenDir which contains the name of your boot disc, delete that line, and resave *!Boot*.
5. Now for the final step. Press F12, and type the following, pressing RETURN after each line. Press RETURN twice at the end to get back to the desktop.

```
ADFS
Mount 4
Opt 4 2
Configure FileSystem ADFS
Configure Boot
Configure Drive 4
```

If you are saving onto a SCSI hard disc, change the two occurrences of ADFS to SCSI.
If you are saving onto a floppy disc, change the two 4s, in the first and last lines, to 0. Do not change the 4 in the Opt line.

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**Find your way round the most important parts of your machine with the Acorn User Handbook**

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# THE MOXON INTERVIEW

## DAVE CLARE

It's tricky to pin it down, but there's something very different about the Acorn market when you compare it to the PC world. Some people have called it the 'Acorn spirit', but whatever phrase you use, there's no doubt that Dave Clare believes in it.

It's a familiar story. Dave started off by supplying cassette and joystick leads for the BBC micro, and branched off into the software business soon after that. And so Clares Micro Supplies was born.

'It was run from a bedroom, until it took over the whole house,' explains Dave. 'So we had to get an office, and the rest is history.'

It certainly is. Clares has always been a prolific software developer in the Acorn market and the advent of the new Risc PC machine can only help.

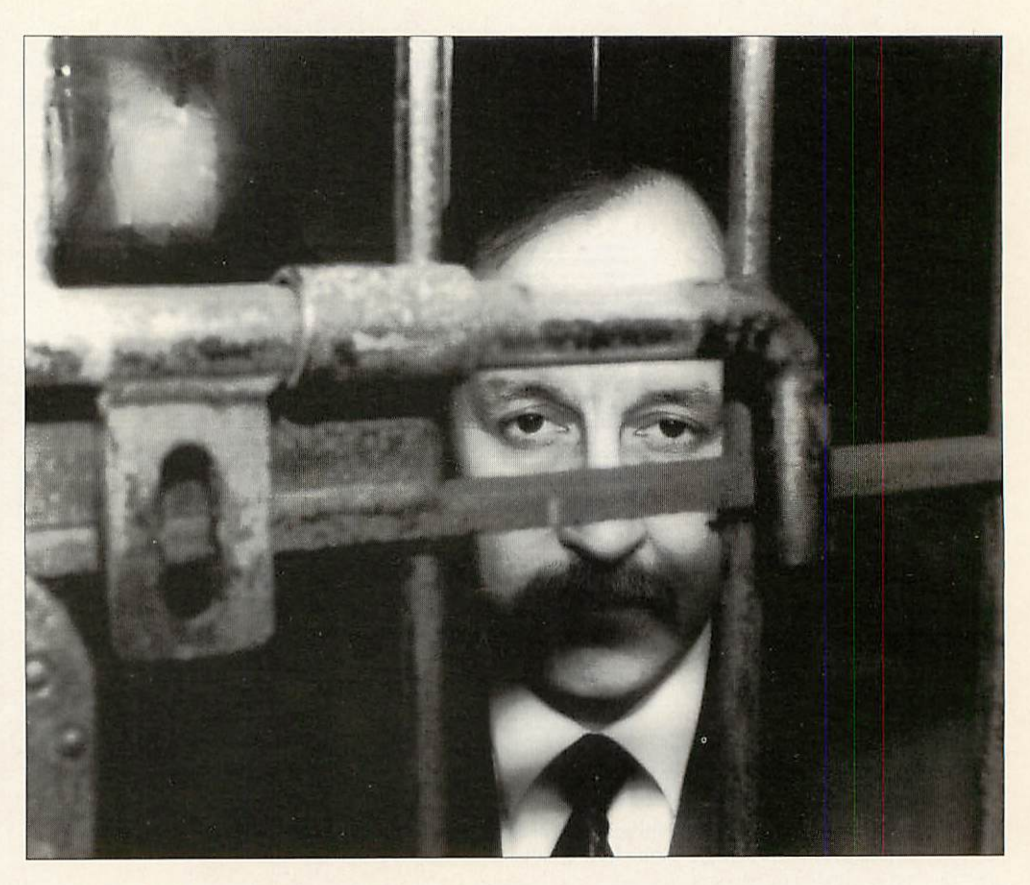
'Up until now you couldn't say that Acorn machines were big in the commercial or games markets,' says Dave, 'and the educational market has been a nice niche market for Acorn. Without it they would be dead, but I would like to see the Risc PC break the mould.'

But how do you think Acorn can do this? Call me an old cynic, but when the Archimedes was launched in 1987 it was going to be a 'world beater' and even its most ardent fans can't claim that it has been.

'I've always recommended that people equip their schools with a mixture of machines,' says Dave. 'I couldn't recommend Acorns for use in Business Studies, but of course they are excellent for music and graphics, for example.

'With the Risc PC I'll be able to recommend just one machine: the PC card is so cheap that everyone will buy one, so a Risc PC will be able to run anything you need.

'And, of course, there is no reason why a Mac card couldn't appear, now that Apple is licensing its operating system. Imagine that.'



REGAN

**'Photo CD is fantastic news. There are so many uses for the medium'**

But there are some sceptics who believe that the cheap availability of a PC upgrade could lead to many people dumping Acorns and just ending up using PCs, because people won't bother to produce native Risc OS products: the Risc PC will be able to run existing PC titles anyway. I don't believe that, and neither does Dave Clare.

'In the short term, the Risc PC will stop the migration from Acorns to PCs,' says Dave. 'Sure, the Mac has come down in price with the advent of the Power PC, but there's no educational software for it; the Mac has been successful, but I don't class it as a competitor.

'The PC, on the other hand, is a competitor, but only because of the price. A Risc PC with the ability to run all DOS software can only do the Acorn market good.'

Another exciting area in the Acorn market is Photo CD, and with Clares' dedication to the graphics market, Dave is obviously excited about it. This is obvious by the release of the *ProArtisan2* CD, which has a heavy emphasis on Photo CD.

'Photo CD is fantastic news for schools,' he says. 'The fact that a class can go on a field trip, armed with those really cheap cardboard box cameras and the teacher can develop them onto a Photo CD is fantastic.

'There are so many uses for the medium. For example, we know a lecturer who ran a course on photography but wanted to concentrate on the compositional side, rather than the actual developing process.

'With Photo CD he doesn't have to waste time and money on developing films, and can concentrate the course on the photography side.'

So things are looking good for the future of the Acorn market. No chance, I suppose, that Clares is considering writing software for the PC, like some other Acorn companies are?

'We're not at all interested in moving into the PC market,' says Dave. 'There's more money to be had there, but it's not half as much fun as the Acorn scene. We make a living and we're happy.'

Now *that's* what I mean by the Acorn spirit.

**Mark Moxon**